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THE SURGICAL TREATMENT OF ASCITES DUE TO CIRRHOSIS OF THE LIVER, WITH REPORT OF TWO CASES.*

By Frederick A. Packard, M.D.,

AND

Robert G. Le Conte, M.D.,

PHILADELPHIA, PA.

The two cases herewith reported are placed on record because of the fact that they are illustrations of a very common condition treated by a method which may be said to be still on trial. This method of treatment has not been employed with sufficient frequency up to the present time to permit of an accurate estimate as to its value. While in neither of these cases was the result such as was hoped for, it is felt that this is one reason why they should be recorded, inasmuch as it is personally known to us that in other instances cases having an unfavorable result have not been placed on record, and that consequently a just estimate of the advisability of the procedure cannot be made. From a medical point of view these two cases illustrate a common experience in regard to cirrhosis of the liver as it is seen in hospital work—that is to say, cirrhosis of the liver in a late stage, with frequently recurring ascites, whose only help lies in repeated tappings of the peritoneal cavity.

Case I.—Henry S., white, aged sixty-three years, an engineer by occupation, an Englishman by birth, was admitted to the Pennsylvania Hospital on August 6, 1900.

The family history showed nothing of importance. He had always been a healthy man, never having had any sickness except an attack of gonorrhœa, which was followed by stricture. He has always been a heavy, constant drinker, taking in winter about six or eight drinks of whiskey daily; in summer ten or twelve glasses of beer daily, and occa-

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sionally more. For the last five years he has noticed that the abdomen has been swollen, especially in the lower portion. For the five weeks preceding his admission he noticed that the abdomen had been gradually increasing in size until finally he was compelled to go to bed, became unable to eat anything, and later was troubled with shortness of breath and swelling of the legs.

On admission his chief complaint was of abdominal distress, which he said made him feel as though the abdomen was going to burst. He was a fairly well-nourished man, with dry, coated tongue, markedly sclerotic arteries, and a pulse of small volume. The notes on his admission stated that there were present a mitral and aortic systolic murmur, that the lungs were negative, the liver was small and without tenderness, and the spleen negative. The notes in regard to the condition of the abdomen on admission are that the veins were quite prominent and the abdomen filled with fluid to such an extent that it measured thirty-nine and one-half inches at a point one inch above the umbilical level. We were surprised to find this note in regard to the prominence of the veins over the abdomen upon his admission, for when he came under our care on September 1st the absence of venous distention was quite remarkable, in view of the extent of ascites. The legs on admission were somewhat œdematous. Examination of the urine showed that it was dark amber, slightly turbid, with a specific gravity of 1025, was strongly acid, contained no albumin or sugar, and in the sediment a few hyaline and granular casts, free pus, and large squamous cells. In spite of the free use of compound jalap powder, given in gradually increasing doses until he was taking a drachm twice daily, the abdomen continued to increase in size until August 15th, when tapping was necessary, and 215 ounces were withdrawn. Eight days later the effusion was noted as having returned. Eighteen days after this first tapping 296 ounces were withdrawn. On September 17th the liver area was said to extend from the upper border of the sixth rib to the costal margin. The circumference of the abdomen was then forty inches at a point one and one-half to two inches above the umbilicus. An increasing discomfort from distention necessitated a third tapping on September 24th, twenty-two days after the second tapping. At this time 320 ounces were withdrawn, and at the end of the operation, although the fluid ceased flowing, it was evident from the dulness in the flanks that all of the fluid had not been removed. Even five days later it was evident that the fluid was reaccumulating. A fourth tapping was necessitated twelve days later, and on this occasion 317 ounces of clear fluid were withdrawn. Owing to the fact that in spite of all care the patient was steadily losing ground, and that tapping at progressively shorter intervals was necessary, it was evident that nature was doing little to obviate the results of portal stenosis, and that no adequate attempt was being made at an establishment of the collateral circulation through the systemic venous system. On this account it was considered that the case was one adapting itself to surgical intervention, particularly because the condition of the kidneys seemed to be rather unusually good for this class of cases, and, while the arteries were sclerotic, the heart itself showed no evidence of being in bad condition to withstand operative interference.

October 13th. Ether narcosis. Abdomen opened in the median line, above umbilicus, for a distance of three and a half inches. No adhe-

sions present. Liver inspected and felt, and proved to be firm, smooth, dark, and much reduced in size, with a small amount of fibrous tissue visible. A small incision was then made through the skin and fascia in the middle line above the pubes, and an ovarian cyst evacuator was forced into the abdomen and guided to the space between the bladder and the rectum. A rubber tube had previously been attached to the evacuator, which drained into a bucket. The patient was then raised by the Trendelenburg table to a semi-sitting position, in order that the ascitic fluid might gravitate to the pelvis while the evacuator siphoned it off. While the fluid was draining off the rest of the operation was being carried out. The peritoneum was glistening, not thickened, but much congested and full of minute bloodvessels. The spleen was enlarged to probably three or four times its normal size, with a thick capsule. The surfaces of the liver, spleen, and omentum and the parietal peritoneum coming in contact with these organs were then rubbed with gauze sponges. This rubbing produced a slight hemorrhagic oozing. The omentum was attached to the abdominal wall in two or three places with catgut sutures and the abdominal wound closed. A glass drainage-tube was then inserted in the opening above the pubis, sterile dressings applied, and broad straps of adhesive plaster were made to encircle the abdomen from the lower border of the sternum to a little below the umbilicus. The amount of fluid recovered measured 330 ounces. The head of the patient's bed was raised so that all fluid might drain to the pelvis. The operative recovery was uneventful. The drainage-tube secreted a little over a pint of fluid a day.

15*th*. Rubber drain substituted for the glass drainage-tube.

20*th*. Drainage reduced to four or five ounces a day. Tube removed, but tube tract continued to ooze.

24*th*. Patient very much depressed. Appetite fair, and general condition fair, but weak.

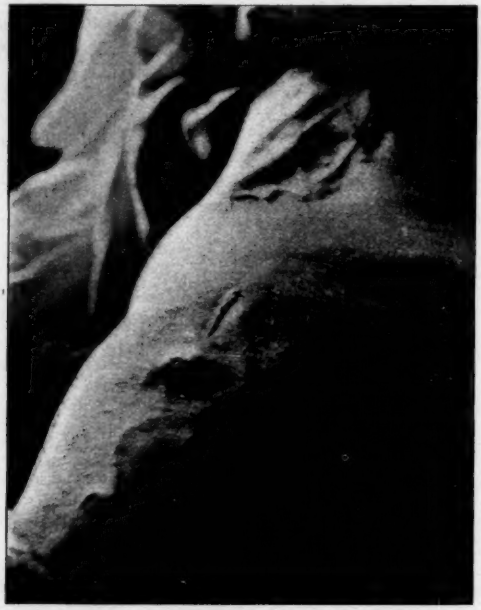
27*th*. Drainage wound closed. Cutaneous veins of abdomen becoming more prominent. Sitting up in wheel-chair.

November 1*st*. Mental depression continues; more marked some days than others. Excitement never present.

5*th*. General condition does not seem to improve; is quite weak; appetite variable.

He was readmitted to the medical ward on November 14th. During his whole stay in the hospital there was no albumin in the urine and the specific gravity was always fairly well maintained. On his readmission the kidneys were apparently doing their work well, so far as chemical and microscopical examination showed. The quantity passed in the twenty-four hours was decidedly below normal. He looked thin and pale, with a typical hepatic facies. The most marked change in his condition as compared with that before the operation was the entire absence of fluid in the abdominal cavity, so far as could be determined by physical examination. In addition to that there were seen on the anterior surface of the abdomen three large venous trunks. (See Figure.) One of these ran from the wound above the umbilicus to the costal margin at the tip of the ninth rib, and seemed to fill both from above and from below upon making pressure on it. Another large trunk ran from the lower portion of the wound to the middle of Poupart's ligament on the left side, and a third corresponding to this on the right side of the abdomen; both of the latter veins filled from

above. After his admission to the medical ward he failed to gain very materially, and quite steadily lost ground. Increasing asthenia with cardiac weakness, which progressed in spite of stimulation, led up to his death from heart failure and pulmonary œdema on December 5th.



At the autopsy, which was performed by Dr. Meigs, at that time on duty in the ward, and by him kindly reported to us, the following conditions were noted:

The abdomen was distended and flabby; the examination was limited to an abdominal incision six inches in length. A certain amount of yellowish fluid slightly tinged with blood was present in the abdominal cavity. The abdominal contents were adherent above and below the umbilicus, and toward the left side to the parietal peritoneum.

The anterior surface of the liver was adherent to the abdominal wall by firm adhesions. The omentum lay above the umbilicus and was adherent to the liver. Universal adhesions were found between the diaphragm and the liver, the adhesions being firmer on this surface than anteriorly and inferiorly. The spleen was very large and weighed twenty-one ounces, about three and one-half times its natural size; its capsule was much thickened, its surface rough and uneven after detachment from the parietes. On section the pulp was found to be soft, with some increase in the fibrous trabeculæ. The kidneys were normal in size, but on section showed a proportional reduction in the cortex. The liver was small, weighing but two pounds and two ounces. The hepatic

substance was torn anteriorly and superiorly where adhesions had been present. The surface of the organ was but slightly uneven in feeling and in color; the right lobe was very much more contracted than the left. On section the parenchyma did not grit under the knife, but there was evident increase of fibrous tissue, with some fatty change. In the portal vein there was found a softened clot occluding the lumen by about one-third of its diameter. The umbilical vein was found to be patulous. The heart was of about normal size, but weighed eleven ounces. Marked dilatation of the arch of the aorta at its commencement, with many calcareous plates, was found. The aortic and mitral valve leaflets were thickened. The apices of both lungs were dark and nodular, and both organs were intensely congested and œdematous.

Case II.—An ex-policeman, James P., aged fifty-two years, was admitted to the Pennsylvania Hospital on September 7, 1900. His father died from cause unknown to the patient; his mother died of "dropsy," as did also one sister. Three brothers and three sisters were living and well. Ten or twelve years ago he began passing blood from the bowel, and occasionally has done so ever since that time. These hemorrhages became troublesome two or three months before his admission. He gave a distinct history of syphilitic infection and confessed to the abuse of alcohol. Four or five weeks before his admission his legs began to swell, and shortly thereafter increase in the size of the abdomen was noted. The latter had been progressing steadily since then. On examination there were found slight cyanosis of the finger-tips, tortuous temporal arteries, and dilated venous radicles of the cheeks and nose. Anteriorly pulmonary resonance was normal, but when in the recumbent position the note became flat over the region posterior to the anterior axillary region on the right side. This dulness was found to shift with change of position, and over it there was constantly absence of breath-sounds, with diminished vocal resonance and fremitus; otherwise the lungs showed nothing abnormal. The apex-beat was in the normal position, and the cardiac dulness began at the lower border of the third rib and the left parasternal line. No abnormal sounds were heard except for a very faint systolic murmur at the aortic area, which was not transmitted. The abdomen was tremendously distended, and there was found an easily reducible umbilical hernia of the size of a small apple. Two inches above the umbilicus the circumference of the abdomen was forty-four inches. The flanks were perfectly flat, as was most of the surface of the abdomen except for a clear, tympanitic area surrounding the umbilicus. Fluctuation-wave was easily detected. In addition to his umbilical hernia he had a large, left-sided scrotal rupture. The legs were œdematous and their veins somewhat distended. The urine had a specific gravity of 1027, was acid, contained no albumin, sugar, or casts. Three days after his admission six ounces of blood were passed from the rectum, and on the following day he had a slight epistaxis. On September 11th the abdomen was tapped and 346 ounces of clear yellow fluid were withdrawn. The tapping gave a great deal of relief, the abdomen being found to measure five inches less in circumference as compared with the previous measurement. After removal of the fluid liver dulness was found to begin at the upper border of the sixth rib and to extend downward to the costal margin. On "jogging-palpation" a mass was felt in the upper zone of the abdomen, extending transversely from the ninth costal margin of the right

side to the median line about two or three inches below the left costal margin. Four days after the tapping (September 15th) movable dulness was again detected in the flanks, which in two days had increased and distention of the abdomen was becoming manifest. In spite of various plans of treatment the fluid accumulated to such an extent that it was thought that this patient also was a proper subject for operative interference. Consequently the patient was transferred to the surgical ward.

October 13th. Ether narcosis. The same surgical procedures were followed as detailed in the last case. The liver was enlarged, hard, and nodular, with a thick, rounded edge. Peritoneum also congested, but not thickened. Spleen not enlarged, so its surface was not irritated. Three hundred and twenty ounces of ascitic fluid recovered. Slight shock following operation, but reaction good. Tube drained about a pint in the first twenty-four hours.

15th. Tube draining less than a pint. General condition good.

16th. Slight delirium during night; tried several times to get out of bed; no rise of temperature; mental confusion present this morning and conversation at times incoherent; urine lessened in amount.

17th. Very active and noisy delirium during night, followed by stupor at 2 A.M., which rapidly deepened into coma. Urine very scanty, containing much albumin and casts. Despite free purgation, sweating, and treatment directed toward stimulating urinary secretion, our efforts were unavailing, and the patient died at 10 P.M. No signs of infection were at any time demonstrable, and the cause of death appeared to be uræmia. Post-mortem examination was refused.

A glance at the urine records made while he was in the medical ward shows that there was no albuminuria and no casts in the sediment, and that the urine had a high specific gravity. It is to be noted, however, that the quantity of urine passed in twenty-four hours prior to his admission to the surgical ward never exceeded thirty-four ounces. At the time these observations were made it was thought that the diminution in the quantity of urine was accounted for partly by the frequent occurrence of watery bowel movements, partly by the rapid accumulation of fluid in the peritoneal cavity, and partly, also, by his diet, which was somewhat limited in the hope of causing absorption of the ascites. Owing to the absence of autopsy it is, of course, impossible to state the condition of his kidneys, yet from the evidence afforded by chemical and microscopical examination it would have been supposed that his kidneys would have stood the strain of an operation involving so little as did this one.

From the account of the surgical treatment it will be seen that in both cases it was found at operation that the condition suspected before opening the abdomen was present—that is to say, the absence of adhesions and of any evident attempt on the part of nature to obviate the effects of portal obstruction. In the patient who died shortly after operation it was unfortunate that no autopsy could be performed, so that the anatomical results of the operation must still remain in doubt. In the second case the autopsy, performed sixty-one days after the operation,

shows that the results aimed at (the formation of adhesions and the establishment of a collateral circulation) were quite well obtained. What effect the operation may have had in this case in lengthening or shortening life it is difficult to estimate, as the patient was losing ground before operation, and the very nature of the case would not allow of any estimate in regard to the probable course had no interference been attempted. He died, as do other cases of advanced cirrhosis of the liver, with evidence of a progressive toxæmia and gradual failure of all the organs to do their proper work.

Doubtless one of the ways by which repeated tappings may aid in the recovery of cases of cirrhosis of the liver is through the formation of adhesions similar to those aimed at in the operative procedure, but to a less degree. The occurrence of ascites in cirrhosis of the liver is undoubtedly a bad prognostic omen. It is, in the first place, a visible measure of the extent of portal obstruction, and, in the second place, it is an indication of a lack of a sufficient attempt on the part of nature to compensate for this obstruction by the establishment of a collateral circulation. The frequent occurrence of cirrhosis of the liver without ascites is well known. Lange (*Inaugural Dissertation*, Kiel, 1888) found ascites present in 34.4 per cent. among fifty-six cases of cirrhosis of the liver of varying degree. Presumably it was absent in the other 65.6 per cent. of the cases. While there are no figures at hand which go to prove it, it is reasonable to believe that in some cases ascites fails to occur because of the establishment of a collateral circulation between the portal and systemic venous systems. While in all cases of cirrhosis of the liver the exact part played by this lesion must be in doubt because of the wide-spread changes present in other vital organs, and probably in all of the tissues of the body, it is reasonable to infer that one of the chief factors in producing a fatal result is progressive toxæmia due to the failure of the liver to destroy toxins absorbed from the portal area. This toxæmia from absence of antitoxic action of the liver is probably present in cases both with and without the formation of a collateral circulation, the only difference between the two classes being that in the former case toxins normally carried by the portal blood would be thrown in large amount into the systemic venous system through the collateral branches directly communicating with the portal supply; whereas in the latter case these toxins would presumably, in part at least, be contained in the ascitic fluid and be removed by tapping.

One of the most exhaustive articles upon ascites and its prognostic value is that by W. Hale White (*Guy's Hospital Reports*, 1893, vol. xlix., p. 1). Some points are brought out in this paper which deserve notice in connection with our subject. Of fourteen cases in which tapping was necessary because of ascites, sufficient data to accurately determine the interval elapsing between the occurrence of ascites and death

were found in twelve. This period averaged only sixty-three days. The author makes the additional statement that he has not been able to find a single case among those which he has collected in which any end but a speedy death could be anticipated after ascites had once developed. In ten cases in which paracentesis was not performed the time from the beginning of the enlargement of the abdomen up to death averaged about two months. He considers that paracentesis is of doubtful value in alcoholic cirrhosis of the liver, as he found that in fourteen cases the patient survived the first and only tapping from but two, at the least, to about forty days at the outside. He considers that where ascites is survived for any great length of time some condition other than cirrhosis, or in addition to cirrhosis, is present, or, in other words, that the ascites is not in this case due simply to cirrhosis of the liver. As an instance of this he notes ten cases regarded during life as cirrhosis of the liver, but which were found after death to have some additional lesion which he believes may have had an important bearing upon the occurrence of ascites. All of these except one were instances of chronic peritonitis or perihepatitis. The only exception was a case of colloid cancer of the peritoneum. Among four cases which he relates where tapping had been performed more than once, cirrhosis was absent in three and present, to a slight extent, in one. In all four there was chronic peritonitis, and among six other cases which were tapped more than once there was cirrhosis of the liver with associated chronic perihepatitis and peritonitis. It would seem, then, from these cases related by Hale White, that the presence of a chronic peritonitis and perihepatitis with cirrhosis of the liver has a favorable rather than an unfavorable bearing upon the prognosis, inasmuch as these cases with peritoneal adhesions and thickenings live for a sufficiently long time to make repeated tappings necessary; whereas in cirrhosis of the liver uncomplicated by these inflammatory lesions death occurred either before tapping had been required or before a second removal could be practised. It is possible that the longer life, after the appearance of ascites in Hale White's six cases of cirrhosis of the liver with chronic peritonitis and perihepatitis, was due not to the fact that the ascites was produced by the chronic peritonitis and perihepatitis, but because the effects of cirrhosis of the liver as regards the portal system were obviated by the formation of peritoneal adhesions somewhat similar to those aimed at in Talma's operation.

An interesting case somewhat bearing upon this question was reported by R. L. MacDonald (*Medical News*, October 12, 1889, p. 398). This case was apparently cured, after sixty tappings, with the removal of an aggregate of 9000 ounces. After an interval of four years from the last tapping the patient was still in good health. In the same paper he records a second patient wherein cure resulted, although at one time

it was necessary to remove the ascitic fluid once every three weeks. Altogether thirty-one aspirations were performed, by which from 8600 to 9000 ounces had been removed. At the time when he was last seen, about a year after first coming under observation and six months after the last tapping, the fluid had not reaccumulated. Owing to the fact that both patients recovered it is impossible to say to what the cure must be attributed; possibly compensatory dilatation of the systemic venous trunks obviated the results of portal obstruction, but it is impossible to say whether the repeated tappings had anything to do with this formation of a collateral circulation.

Quincke (*Nothnagel's spec. Path. u. Therap.*, Band xviii., Theil 1) refers briefly to a case reported by Casati where ascites disappeared after 111 punctures. Quincke states that the relief from the establishment of a collateral circulation can rarely become sufficient to cause the disappearance of ascites. He gives the average duration of life after the establishment of cirrhosis at ten years. He states, however, that he does not believe the establishment of a collateral circulation can contribute much to the relief of an obstructive ascites, but that when an outspoken ascites disappears it is because chronic peritonitis has had a part in its production. Possibly the same remark might hold good here as was made in regard to Hale White's observations, namely, that in the cases of cirrhosis of the liver with chronic peritonitis the survival for a considerable length of time was due to the fact that the latter lesion assists in some way in the formation of a collateral circulation.

History and Theory of the Operation. To Talma, of Utrecht, belongs the credit of first suggesting the operative formation of adhesions between the abdominal organs and the parietes for the cure of ascites due to cirrhosis of the liver. As a result of this suggestion three operations were performed in Holland; the first, in 1889, by Van der Meule, the patient speedily dying from shock; the second by Schelkly, in 1891, in which the patient on the fourteenth day, during violent delirium, tore off his dressing and infected the wound; death from peritonitis speedily followed. The third by Thomas Lens, in 1892. This case survived the operation, but died in six months without diminution in the ascites. The failure of improvement was attributed to the smallness and atrophic condition of the liver. Such poor results seem to have had their effect on Continental surgeons, for no further operations were undertaken for four years.

In the meantime Drummond and Morison independently conceived the same idea as Talma, and in 1894 and 1895 Morison operated on two cases in England. In the first patient the diagnosis is in doubt, as the liver at the time of operation showed no evidence of cirrhosis. The patient died nineteen months after operation without any diminution in the ascites. In the second case the liver was typically cirrhotic,

the ascites disappeared, and the patient was well two years later. To Drummond and Morison must be given the credit of being the first to bring the operation to a successful issue, and by their success to have brought the procedure prominently before the medical world.

The operation was designed on the theory that ascites in cirrhosis of the liver is due to obstructed portal circulation—*i. e.*, to the increased pressure in the portal vein. If, therefore, some of the portal blood could be made to go directly into the systemic circulation without passing through the liver, the pressure in the portal vein would be relieved and the ascites would disappear. Several cases of cirrhosis of the liver (such as those mentioned above) have been reported in which after repeated tappings the ascites has permanently disappeared, and in one case the patient lived twenty years, death resulting then from causes unconnected with the liver. Post-mortem examination of several cases of cirrhosis of the liver where ascites was absent seemed to show one of two things: either that the viscera were connected to the parietes by vascular adhesions, or that the normal communications between the portal and systemic veins were greatly increased in capacity. These normal communications are: a vein in the round ligament of the liver connecting the left branch of the portal with the epigastric and other veins in the abdominal wall; veins in the subperitoneal tissue lying between the folds of the hepatic ligaments connecting the portal trunk with the phrenic vein and vena azygos major; the coronary veins communicating with both the azygos veins through the œsophageal plexus; the inferior mesenteric vein communicating with the iliac by means of the middle and inferior hemorrhoidal plexuses. The pancreatic veins can also empty into the retroperitoneal veins.

Talma has lately reported three cases in which a natural collateral circulation was evident. All were subjects of cirrhosis of the liver, and at one time ascites had been present, but had disappeared before death. One died of acute bronchitis, the second from a stab wound of the abdomen, and the third from toxæmia due to a progression of the disease. At the autopsies an abundant collateral circulation through enlargement of natural channels was easily demonstrable. In one case the vein of the round ligament of the liver was as large as a finger.

An enlargement of this collateral circulation may sometimes be seen during life in the superficial veins running through the abdominal wall, and occasionally by the formation of a "caput medusæ" at the umbilicus. When these communicating veins enlarge a very considerable amount of blood may be thrown directly from the portal into the systemic circulation without passing through the liver. If these veins do not enlarge, or increase so little in size as to afford little or no relief to the portal congestion, new channels may be formed by adhesions between the viscera and the abdominal parietes. Such adhesions will

develop innumerable little vessels, which will enlarge and carry a considerable amount of blood, if they are needed in the economy. We have all seen repeatedly the enormous veins that will form in the omentum when it becomes adherent to large tumors of the uterus or ovary, and the free communication these vessels have with the new growth.

Drummond and Morison therefore reasoned that if the mechanical theory of ascites in cirrhosis of the liver is correct, the establishment of a new accessory circulation between the portal and systemic systems would cure the ascites, and so remove one of the chief causes of suffering and death in this disease.

There are, however, some who object to the mechanical assumption of the ascites on the ground that it does not occur when the blood-pressure is presumably highest in the portal vein—*i. e.*, early in the course of the disease, when hemorrhages from the stomach and bowels are met with—but believe that ascites is a later manifestation of the disease as a result of the toxæmic condition of the blood. This toxæmic state depends upon the cirrhotic liver being unable to destroy the poisons that are continually passing to it from the alimentary canal, and these poisons, reaching the general circulation, exert a lymphagogue action and lead to œdema of the feet, ascites, etc. They therefore urge that the formation of an artificial collateral circulation, while it may modify portal engorgement, would not tend to improve the general state of the health, but rather the reverse. However, if such a collateral circulation does lead to improvement, the improvement might be explained in two ways: 1. By diminishing the flow of blood through the liver it may enable the liver to deal more efficiently with the blood that passes through it, and so reduce the toxæmic condition. 2. The increased vascular supply to the surface of the liver may enable the hepatic cells to undergo compensatory hyperplasia by improving their nutrition. This compensatory hypertrophy of the liver will enable the organ to carry on more efficiently its important functions, and so lead to a latency of its symptoms.

In refutation of this latter theory, namely, that the ascites is due to the toxæmic condition of the blood, we would advance the following argument: 1. The hemorrhages from the stomach and bowels in the early stage of the disease do not necessarily prove that the pressure in the portal vein is then at its highest, as they also may be accounted for in nature's attempt to increase the collateral circulation by enlarging the œsophageal and hemorrhoidal plexuses, such enlarged vessels having less resistance to the pressure than normal ones. 2. The lymphagogue action of the toxæmic poisons in the general circulation should exert such action wherever the general circulation goes, and we should have, besides œdema of the legs, œdema of the hands, of the face, of the brain, etc., effusions within the pleura, pericardium, and membranes

of the brain, and the most prominent effusion should not be where alone the portal blood exists, namely, the peritoneum. 3. In the first case we reported—a man requiring frequent tappings for the relief of ascites—artificial adhesions were produced. The man lived two months without a return of ascites, dying as a result of progressive toxæmia. His liver was about half the normal size. If toxæmia had been the cause of the ascites the fluid should have reaccumulated, for he died a toxic death.

We would therefore hold that with our present knowledge as to the cause of ascites in cirrhosis of the liver the mechanical explanation is the best, and that through the relief of the portal congestion, either by the existing channels or by the production of new ones, ascites may be prevented.

The effects of portal blood passing directly into the general circulation have been very carefully studied in a series of experiments in dogs. N. V. Eck, in 1874, conceived the idea of establishing a permanent communication between the vena cava and the portal vein after ligature of the latter at its entrance into the liver. The experiments were very fatal. Of eight dogs treated in this manner seven died within a week, and one, after living two and a half months, ran away and was lost before the effects of the operation could be studied. J. J. Stolnikow repeated Eck's experiments in 1882 with equally fatal results. The post-mortem examinations of the liver in his cases showed neither macroscopically nor microscopically any change from the normal. The gall-bladder was filled with bile, the intestines contained bile, and the stools were of normal color. In no case was there any degeneration or necrosis of the liver. This is, of course, natural, as in no case was the nutrition of the liver (the hepatic artery) interfered with. It is interesting to note that bile was still formed, although all portal blood was cut off from the liver.

In 1892 Hahn, Massen, Nencki and Pawlow began a similar series of experiments, and, owing to improved instruments and an antiseptic technique, their results were much less fatal. Of sixty dogs operated upon twenty recovered and were carefully studied. The facts brought out are extremely interesting. A considerable number of dogs showed an immediate change in disposition, which lasted for a longer or shorter period. Gentle and obedient dogs became cross, peevish, and disobedient, and some so fierce that they could not be approached. Stages of excitement and depression followed each other, the ataxic gait was noticed, and stupor, coma, and convulsions were present. Such symptoms were sometimes followed by death, but often the dog entirely recovered. They appeared, as a rule, immediately after operation, but occasionally were delayed for days. The temperature following operation was always subnormal, and the following day it would rise one or

two degrees and remain there for ten or fifteen days. Some dogs lost progressively in weight until their death; others kept their weight or even gained. When a dog was fed with meat the above symptoms speedily appeared, sometimes with a fatal result; when fed with non-nitrogenous foods they seemed perfectly well. Such phenomena resemble closely a toxæmic or uræmic condition in man, and seemed to be the result of nitrogenous foods. The experiments teach us that if portal blood is to be brought directly into the systemic circulation this should be done gradually, in order to avoid an overwhelming toxæmia; and also when a collateral circulation is established, and our patient shows signs of excitement or depression, nitrogenous foods should be reduced or entirely cut off for a period of time.

Tilmann undertook another series of experiments on dogs to prove the value of peritoneal adhesions in forming a collateral circulation. He found that all dogs in which he ligated the portal vein, or the mesenteric vein before it was joined by the gastric and splenic, died. In one the mesenteric vein was ligated and at the same time the omentum was stitched to the abdominal wall. Death occurred in thirty-six hours. In one the peritoneum was partially stripped from the abdominal parietes and the omentum placed between it and the rest of the abdominal wall; the intestines were at the same time irritated with antiseptic solutions. Eight days later the abdomen was reopened and the mesenteric vein ligated. The dog was very ill with hemorrhages from the bowel. Eight days later he was again reopened and the portal vein ligated at its entrance to the liver. Bloody stools again appeared, but the dog recovered. Innumerable small veins became apparent on the abdominal wall. A large hernia developed in the scar of the first operation, which later ulcerated, with profuse hemorrhage. After twelve weeks the dog was killed. The mesenteric vein was changed into a fibrous cord, but the portal vein had not entirely closed, a central channel remaining of the size of a pin-head. There was fatty infiltration of the liver. Such an experiment clearly indicates the possibility of peritoneal adhesions developing very numerous and efficient channels of communication with the systemic veins, and also the value of such communications when the portal system is obstructed. Further proof that such a collateral circulation may be readily produced in man is shown in one of Morison's cases and also in one of ours (the pathological findings are detailed above). Morison's case had been operated upon two years before death for ascites with cirrhosis of the liver. Since then the patient had regained normal health, and death followed an operation for ventral hernia. At the necropsy the liver, spleen, omentum, and intestines were found attached to the anterior abdominal wall, with numerous band-like adhesions. Many of these adhesions seemed to contain little beside bloodvessels, and in several of them the

vessels were four inches in length. Some were the size of a normal radial artery.

It has been held by some authorities that improvement in the cases following operation may be due to the simple laparotomy, and they instance the cure of tuberculous peritonitis by such means. Many cases, through mistakes in diagnosis, have had laparotomy performed, and when cirrhosis of the liver was found were closed without further operative procedure. In such cases no benefit was derived from the operation. In a case reported by Talma a simple laparotomy had no effect on the ascites. A little later a second operation was performed and the omentum stitched to the abdominal wall. This resulted in a cure of the ascites.

THE OPERATION. A variety of different methods have been used to produce a collateral circulation through peritoneal adhesions. The abdomen has been opened in the median line above and below the umbilicus, in the right semilunar line and on a line parallel with and one inch away from the right costal border. The omentum has been sutured to the incision alone and to the anterior abdominal wall. The parietal peritoneum has been detached and the omentum sutured between it and the abdominal wall. The omentum has been brought between the liver and the diaphragm and sutured there. The surface of the liver and spleen and intestines has been irritated, and also the peritoneum overlying them. The peritoneal surfaces have been irritated with dull and sharp curettes, with the blade of forceps, with a hat-pin, with fingernails, and with sponges. Drainage has been used, and, on the other hand, the abdomen has been closed without it. Ether, chloroform, nitrous oxide gas, and local anæsthesia have all been used. In view of the danger of kidney complications, two cases having died from uræmia, I (Le Conte) would strongly condemn the use of ether.

I (Le Conte) should recommend the following method under local anæsthesia or chloroform narcosis: The incision is made above the umbilicus and a little to the left of the median line, so that no injury may come to the vein in the round ligament. The liver is then inspected and palpated to confirm the diagnosis. A small opening in the median line above the pubis is made, and through this the fluid is siphoned off while the operation above is being completed. The parietal peritoneum over the omentum, liver, and spleen (if the latter organ is enlarged) is dried and gently rubbed with a gauze sponge, the same treatment being also given to the surfaces of the organs. Rougher handling is entirely unnecessary, as a healthy peritoneum when brought in contact with dry gauze for a fraction of a minute will retain the impression of the gauze mesh. The omentum is then stitched in two or three places with catgut to the anterior abdominal wall and the incision closed. If the operation is undertaken in a

hospital, where you may be reasonably sure that a drainage-tube will be properly cared for, drainage may be made through the lower opening, particularly in cases where the ascites has been rapidly reaccumulating. If you have no confidence in the nursing, close the lower wound also and resort to tapping until such time as the collateral circulation has been established. Drainage is very useful for three or four days, until the adhesions can become firm. To use it for more than a week seems to be a useless risk to the patient, as a tube tract is probably not formed so quickly as in an ordinary laparotomy, owing to the abundant secretion of fluid, and therefore the dangers of infection are greater. If the Trendelenburg table is used, the patient may be raised to a semi-sitting position while the ascitic fluid is being siphoned off. After the dressing is applied the abdomen should be encircled with broad adhesive straps from the ensiform cartilage to below the umbilicus, in order that the parietal peritoneum may be brought and kept in contact with the visceral. The operation can be quickly finished, and should be scarcely more dangerous than an exploratory laparotomy; but we must remember that other organs beside the liver are frequently diseased (the heart, kidneys, and bloodvessels), and such subjects endure operative interference but poorly.

We have been able to collect from the literature twenty-two cases. Ewart's case has not been added to the table, as the post-mortem proved it to be one of calcareous adherent pericarditis, and not one of cirrhosis. A case by Delagénière and two Italian cases have also been omitted, because we have been unable to find any authentic report of their histories or the results of operation, although a cure is said to have been brought about. One case (No. 4) was included, although the diagnosis of cirrhosis was doubtful and was not confirmed at operation.

These twenty-two cases represent all we have been able to gather from the literature on the subject. In what proportion they represent the total number of cases operated upon we have no means of knowing. Small as the number is, it is all we have from which to draw our conclusions. We may look at this table in three ways. Taking all the cases recorded in it we have a total of twenty-two operations, with five immediate deaths (death ensuing from a few hours to fourteen days after operation), three ultimate deaths (the period of life varying from two to nine months, two having no improvement in the ascites and one with the ascites cured), three unimproved, two improved (where the ascites recurred more slowly and in lessened amount), and nine recoveries. Placed in percentages it will read:

Immediate death	22.7 per cent.
Ultimate death	13.6 "
Unimproved	13.6 "
Improved	9.1 "
Recovered	40.9 "

No.	Date.	Operator.	Sex and Age.	Condition of liver.	Operation.	Result.		Ascites.	Remarks.
						Immediate.	Ultimate.		
1	1889	Van der Meule	.....	Cirrhotic (?)	Omentum stitched in wound (?)	Death from shock.			
2	1891	Schelkly.	M.	Cirrhotic.	Omentum stitched in wound (?)	Death 14 days.	.....	.....	During delirium patient tore off dressings, and infected wound. Death from peritonitis.
3	1892	Thomas Lens.	M. 61	Atrophic cirrhosis.	Omentum stitched in wound.	Recovery.	Death 6 mos.	Unimproved.	Failure attributed to atrophic condition of the liver.
4	Sept., 1894	R. Morison (Drummond).	F. 42	Large, pale, smooth (not cirrhotic).	Liver, spleen, omentum, and parietal peritoneum sponged; drainage.	"	Death 19 mos.	Unimproved.	Frequent tapping required. Diagnosis of cirrhosis not confirmed.
5	Oct., 1895	R. Morison (Drummond).	F. 39	Typical cirrhosis.	Liver, spleen, omentum, and parietal peritoneum sponged; drainage.	"	Recovery.	No recurrence.	Well two years later. Death due then to operation for ventral hernia.
6	March, 1896	Von Eiselsberg and Narath (Talma).	M. 9	Enlarged, surface granular; spleen enlarged.	Gall-bladder and omentum stitched to abdominal wall; no drainage.	"	"	Trace.	Three operations. Two years after seemed perfectly well. Spleen much smaller; liver still hard but functions good. No ascites.
7	Jan., 1897	R. Morison.	M. 42	Small, hobnailed; spleen six times normal size.	Liver, spleen, omentum, and intestinal coils sponged; drainage.	"	"	No recurrence.	Depression and excitement followed operation. Well two years after, and no return of ascites.
8	March, 1897	R. Morison.	F. 54	Advanced cirrhosis; spleen enlarged.	Omentum sutured; no sponging.	Death 11 days.	.....	.....	Complications, large interligamentary ovarian cyst and umbilical hernia. Cirrhotic kidneys. Death due to uræmia.
9	Oct., 1898	Narath (Talma).	M. 59	Hard, nodular, capsule thick; spleen enlarged.	Omentum and parietal peritoneum sponged and stitched together.	Recovery.	Recovery.	No recurrence.	Melancholy before operation; after, delirium and melancholy. Improved by reduction in nitrogenous foods. Eventually recovered entirely.
10	Nov., 1898	R. F. Weir.	M. 39	Cirrhotic, nodular, and fatty.	Liver scraped with hat-pin; omentum stitched to abdominal wall; drainage.	Death 5 days.	.....	.....	Septic peritonitis from drainage-tube. Echinococcus cyst of liver.

11	Nov., 1898	A.E.Neumann.	F. 45	Hard, firm, smooth; spleen enlarged.	Parietal peritoneum curetted and omentum stitched.	Recovery.	Recovery.	Trace.	Well six months later. Veins over abdomen and around umbilicus prominent; no syphilis.
12	1899	Emil Ries.	F. 38	Nodular, hypertrophic cirrhosis.	Omentum sutured; no drainage.	"	"	Never present.	Adhesions present between liver. Operation for hemorrhages from bowel; this was cured.
13	March, 1899	Narath (Talma).	F. 67	Small, hard, nodular, markedly fibrous.	Omentum sutured; no drainage.	"	Unimproved.	Unimproved.	Ascites chylus. Liver cirrhosis secondary to chronic peritonitis.
14	May, 1899	Folmer (Talma).	M.	Enlarged, hard, granular.	Parietal periton'm scraped with curette; omentum sutured.	"	Unimproved.	Unimproved.	Cirrhosis secondary to chronic peritonitis. Adhesions already existed between liver, spleen, omentum, and the abdominal wall.
15	July, 1899	G. R. Turner (Rolleston).	M. 45	Hobnailed; spleen enlarged.	Surface of liver rubbed with finger-nail, director, and sponge; no drainage.	"	Recovery.	Trace.	Well four months later. Omentum sutured between liver and diaphragm; depression followed operation. Syphilitic.
16	July, 1899	G. R. Turner (Rolleston).	M. 52	Marked cirrhosis.	Surface of liver rubbed with finger-nail, director, and sponge; no drainage.	"	Unimproved.	Unimproved.	Margin of liver sutured to abdominal wall. Omentum not sutured. No syphilis.
17	Nov., 1899	Grinon	F. 47	.....	Parietal peritoneum detached and omentum brought between; no drainage.	"	Improved.	Diminished.	Marked venous development on abdominal wall. Urine scanty previous to operation, now normal in amount.
18	Nov., 1899	A. A. Babroff.	F. 38	Atrophic cirrhosis.	Omentum sutured; no drainage.	"	Recovery.	Trace.	Veins about umbilicus became enlarged.
19	1900	Bossowski.	F. 9	Cirrhotic.	Cholecystotomy.	"	Improved.	Decreased.	Ascites returned more slowly.
20	July, 1900	C. H. Frazier.	M. 45	Cirrhotic.	Parietal peritoneum and omentum sponged and sutured; no drainage.	"	Recovery.	Tapped twice.	Three months after seemed well and free from ascites. Syphilitic.
21	Oct., 1900	R. G. Le Conte (Packard).	M. 63	Firm, small, dark, and fibrous; spleen four times normal size.	Surface of liver, spleen, omentum, and parietal peritoneum sponged; omentum sutured; drainage.	"	Death 61 days.	No recurrence.	Death; toxæmia result of atrophic condition of liver. Mental depression at times marked. Abdominal veins became very prominent. No syphilis.
22	Oct., 1900	R. G. Le Conte (Packard).	M. 52	Enlarged, hard, nodular; spleen normal.	Surface of liver, omentum, and parietal peritoneum sponged; omentum sutured; drainage.	Death 4 days.	.....	.....	Died with uræmic symptoms and suppression of urine. No sign of infection. Post-mortem was refused. Syphilitic.

If we eliminate the first three cases because the operative procedure at that time seems faulty and the technique not as perfect as it is to-day, and also the fourth case because the diagnosis of cirrhosis is doubtful, we have a total of eighteen cases, with three immediate deaths (one from infection and two as the result of kidney complications), one ultimate death, three unimproved, two improved, and nine recoveries. Placed in percentages they will read:

Immediate death	16.6 per cent.
Ultimate death	5.5 "
Unimproved	16.6 "
Improved	11.1 "
Recovered	50.0 "

If we still further eliminate No. 8 because the operation was complicated by the removal of a large interligamentary ovarian cyst and the radical cure of an umbilical hernia, and No. 10 on account of the presence of a hydatid cyst of the liver, and also Nos. 13 and 14 because the cirrhosis of the liver was not primary, but secondary to a chronic peritonitis, we will have a total of fourteen cases, with one immediate and one ultimate death, one unimproved, two improved, and nine recoveries. In the table of percentages it will read:

Immediate death	7.1 per cent.
Ultimate death	7.1 "
Unimproved	7.1 "
Improved	14.3 "
Recovered	64.3 "

Contrasting the worst view with the best possible construction we can place on this table, we have the operative mortality lying somewhere between 23 per cent. and 7 per cent. and the recoveries between 41 per cent. and 64 per cent. When we remember that the cases subjected to operation had been for weeks or months under careful medical treatment and had been repeatedly tapped, and that their condition was unimproved or growing steadily worse, the above statistics are certainly very encouraging. Weir has aptly said, "Of necessity, in the early stages of any surgical measure such as this, one must and should operate only on those patients who are regarded as hopeless of cure by any other means." This, of course, reduces the chances of success to a minimum.

It is interesting to note that in one case (No. 12) operation was undertaken on account of severe hemorrhages from the bowel. The patient had hypertrophic cirrhosis without ascites, and after operation the hemorrhages ceased. Talma in this connection recommends that where hemorrhages from the œsophageal plexuses are free operation should be performed.

In speaking of the chances of success or failure after operation Talma lays particular stress upon two points: 1. That the cirrhosis of

the liver is a primary one, and not secondary to some other disease, as chronic peritonitis with serous effusion. How such a differential diagnosis may be made before operation we do not know, but the points of difference when the peritoneum is once opened are marked. In a primary cirrhosis the thin and glistening character of the peritoneum is scarcely altered from the normal, although many fine injected blood-vessels may be seen through it, while in chronic peritonitis the membrane is tough, much thickened, and has lost its glistening character. 2. That the function of the liver cells must still be good. If the liver is so atrophied that the functions of its cells are reduced to their lowest ebb it is not to be presumed that operation will restore such function or prolong life, although the ascites may not return.

Let us look for a moment at some of the opinions expressed by others. Rolleston and Turner advise early operation, before the liver tissue becomes so degenerated as to be beyond the hope of undergoing any improvement. They believe that medical treatment should be persisted in only while the diagnosis is in doubt, and should be especially directed to counteract any possible syphilitic disease of the liver. When a course of iodide of potassium has not benefited a case of ascites which is thought to be due to either syphilis or cirrhosis, medical treatment should be suspended and operative measures employed. They further recommend that when cirrhosis can be diagnosed with fair certainty in the pre-ascitic stage, from the presence of hæmatemesis, enlarged spleen, etc., operative treatment would probably succeed better than in the later stages. Morison believes that it is no longer advisable to treat ascites due to cirrhosis of the liver by repeated tappings if the patient is otherwise sound and in fair general condition. After one or two tappings have failed operation offers the best chance for a prolonged and useful life. Talma's views are practically the same. Friedmann states that a *sine qua non* before operation is undertaken is that the liver cells must still have the power to act—*i. e.*, before the liver is too far degenerated—and recommends operation not later than after the second tapping.

Expressions such as these, by men who have given the subject much thought and careful study, and who have had a personal experience with the operation, are not to be brushed aside lightly.

Conclusions. *A priori* cases of cirrhosis of the liver stand injury badly, and therefore are poor subjects for operation. The resistance of their tissues is presumably much less than in health. The exact estimation of the amount of degeneration of the various organs, including the liver, is extremely difficult or impossible, consequently the mortality of the operation under consideration would naturally be expected to be relatively high. The statistics given above seem to show that the operation has won a distinct place, and in the future a clearer conception of

the suitability of particular cases for the operation may be possible. Without operation these patients as a class are doomed to a life of perpetual invalidism, requiring constant treatment and repeated tappings to make life bearable. It is our opinion that where the diagnosis of pure portal cirrhosis of the liver can be made, and where persistent and well-directed medical treatment is productive of insignificant results, the operation should be strongly recommended. On the other hand, it would seem that the operation is scarcely indicated, if not contra-indicated, in cases of ascites associated with other kinds of cirrhosis (Hanot's, syphilitic, mixed, etc.), or with chronic peritonitis.

NOTE.—In an abstract in the *Lit. Beilage der deutsch. med. Woch.*, January 3, 1901, p. 7, reference is made to an article by P. Commandini and W. Salvolini (*Gaz. degli Ospedali e del. Clinic.*, No. 150) in which two cases of cirrhosis of the liver are reported where the omentum was sutured to the abdominal wall. In one death occurred on the fourteenth day after operation, in the other the ascites quickly returned. The reference was seen too late for incorporation into our table.

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SPLENIC-MYELOGENOUS LEUKÆMIA WITH PULMONARY TUBERCULOSIS.

REPORT OF CASE.

By Henry L. Elsner, M.D.,
PROFESSOR OF THE SCIENCE AND ART OF MEDICINE AND CLINICAL MEDICINE, SYRACUSE UNIVERSITY,

AND

William A. Groat, B.S., M.D.

The association of pulmonary tuberculosis with any variety of true leukæmia is exceedingly rare. Medical literature contains the reports of several cases in which there was a combination of lymphatic leukæmia with tuberculosis. In the terminal stages of pseudo-leukæmia, far-reaching tuberculous changes in the various organs of the body are frequently found.

Splenic-myelogenous leukæmia, combined with tuberculosis, is of such rare occurrence that there is practically no literature on the subject at the present time. The rarity of these complications is made positive by the fact elicited through private correspondence that clinicians and pathologists of such wide experience as Stengel, Osler, Cabot, Prudden, and Janeway have never seen a case.

The case which we are about to report is one of splenic-myelogenous leukæmia associated with advancing pulmonary tuberculosis. The physical signs, the blood and sputum examinations are characteristic, and make the diagnosis positive.

On December 25, 1899, Dr. Breese referred Mr. Daniel O. to us for diagnosis. The patient is a baker, was born in Ireland, and is a married man, aged forty years. He has one child seventeen months old, to all appearances perfectly well. His environment has been favorable, though his habits have not always been good. For several years he has been addicted to the use of whiskey, but says that during the past few months he has not taken spirits.

Family History. The father of the patient is seventy years of age, and is enjoying excellent health. The mother died after several years of sickness, during which there was progressive loss of weight. Her symptoms were suspicious of general tuberculosis. One brother died of pulmonary tuberculosis at the age of thirty; another brother died of typhoid fever; otherwise the family history is negative. He denies having had syphilis; had gonorrhœa twelve years ago. After his twentieth year he had measles.

Present Illness. For many months before the advent of continuous symptoms the patient complained of a sense of fulness in the abdomen and a progressive increase in its size. His general health had been below par. He was less active than usual, and had become depressed. Early in the spring of 1899 the patient complained of feeling tired, felt

that he was growing weaker from day to day; his work became irksome. Increasing general malaise with a sense of weight in the abdomen were among his most annoying symptoms. He says that he was so weak after finishing his work that he was forced to take a drink of whiskey before going home. These symptoms persisted three or four weeks, when he noticed that his abdomen was becoming more and more prominent. During the summer the abdominal symptoms increased, the most prominent being the sense of weight, a dragging sensation, occasional pains; these were never severe, but caused more or less faintness.

About November 15, 1899, his color changed. He noticed that he was growing pale and sallow. Exercise or any muscular effort caused shortness of breath. About this time he commenced to cough, and during the last days of November he had occasional night-sweats. From November 15 until December 26, 1899, he averaged about three night-sweats each week. After December 25th his night-sweats became more frequent. At the present time he has these every night unless controlled by medicines.

About November 20, 1899, the patient's cough was so troublesome as to require treatment, and it was not until that time that he consulted a physician. He continued with his first physician but a few days, when he consulted a second, owing to the recognition of a tumor in the abdomen. His second physician called a third in consultation. It was decided that he had a tumor, and he was recommended to go to the hospital. About this time (December 25, 1899) Dr. Breese was called to see the patient. His leading symptoms were cough, pains in the back and across the abdomen, night-sweats and slight fever. His temperature averaged between 101° and 102° F. His pulse was uniformly accelerated.

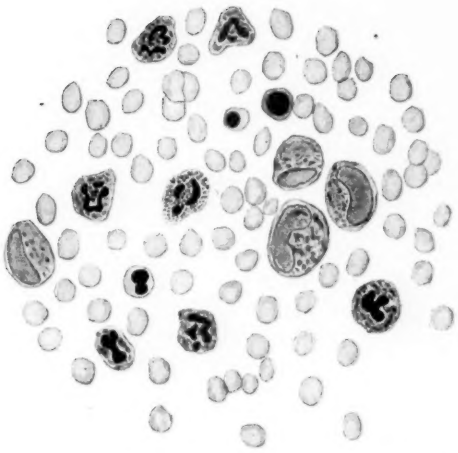
When Dr. Breese sent the patient to us for examination his temperature was 100.2° F. in the morning, pulse 96, and respirations 28. The color of the patient was characteristic. He appeared sallow, anæmic, and his face looked puffy. His weight was about 150 pounds. He had lost about fifteen pounds during the preceding three months. Close questioning failed to show that he had ever suffered from enlarged cervical glands or enlargements of any kind in any part of his body.

A few days after we first examined the patient he developed pleurisy without effusion, and during the following three weeks had a temperature which averaged 102° F. His pulse remained accelerated. From this acute complication he made a slow recovery, and believes that his general condition has been slightly improved since. The patient's cough has grown more annoying, however, and during the past five weeks has kept him awake more or less during the night.

The expectoration from November 15, 1899, until about the middle of January, 1900, was thin and watery, with occasional streaks of blood. Since January 15, 1900, the expectoration has become thick, greenish in color, mucopurulent, and nummular. Repeated bacteriological examination of the thin sputum before February 20, 1900, failed to show the presence of tubercle bacilli, though there were occasional shreds of fibrous tissue. Since that time, with an increase of and change in the character of the sputum, tubercle bacilli have been found. The expectoration continues to be blood-streaked.

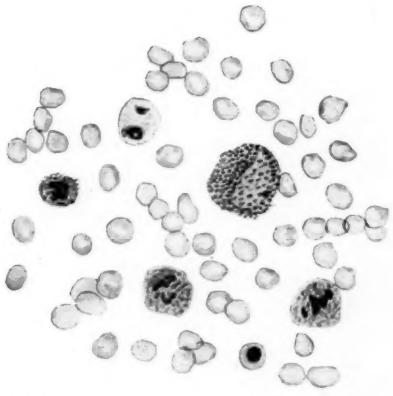
On April 7, 1900, the patient complains of more profuse night-sweats than ever before. He says that his cough is growing more harassing,

Fig. 1.



Appearance of the Blood-film Stained with Eosin and Methylene-blue.

Fig. 2.

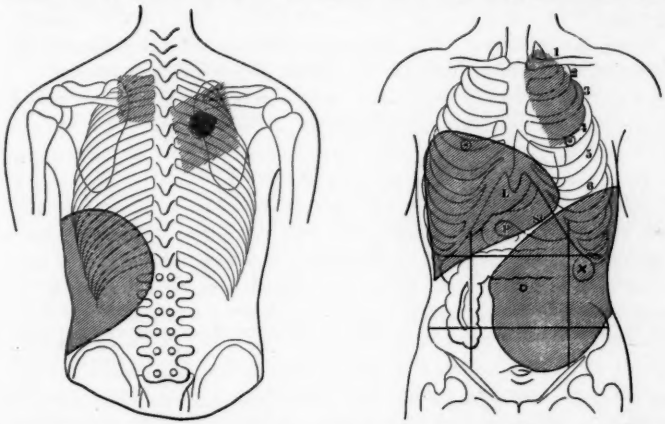


Appearance of the Blood-film Stained with Ehrlich's Triacid Mixture.

that the sense of weight is almost constant; in fact, the abdominal symptoms have increased during the past two weeks. There are no symptoms referable to the eyes; he rarely has tinnitus aurium; he has a slight nasal catarrh; examination of the mouth and fauces is negative; the teeth are fairly well preserved; the tongue is moist, heavily coated; breath is offensive; the skin presents the same characteristic appearances, considerably increased, which were noticed when the patient was referred to us.

Physical Examination. The superficial glands throughout the body are not palpable; there are no cicatrices visible. The heart-sounds are normal; the abdomen is abnormally prominent, and the abdominal veins are enlarged. Muscular development is fair.

Lungs. On December 25, 1899, inspection shows the thorax well developed, excursions of its left half less free than are those of the right. The pectoral reflexes on both sides are enormously exaggerated. Percussion gives high pitched resonance at the left apex in the supra-



clavicular and infraclavicular regions, the dulness is continuous with that of the cardiac region. Posteriorly in the left suprascapular and interscapular regions the percussion-note is flat. Both anteriorly and posteriorly there is roughened and markedly exaggerated breathing, vocal fremitus and voice-sounds are decidedly increased. The percussion-note at the right apex anteriorly is found clear, while posteriorly in the interscapular region it is abnormally high pitched, and the breathing is bronchial in character.

On April 5, 1900, the areas of dulness and flatness are found increased. In the upper half of the interscapular region on the right side there is cavernous breathing. These changes are shown in the accompanying diagrams. On the anterior surface of the posterior laryngeal wall there is deep tuberculous ulceration. The patient has been hoarse during the past month. The temperature was 100° F., pulse 96, respirations 24.

Liver. The liver reaches to the upper border of the fourth rib anteriorly. In the epigastric region the liver dulness is almost entirely lost in the flatness caused by the enormously enlarged spleen.

Spleen. The left half of the abdomen is occupied by the spleen, which reaches about three finger-breadths beyond the median line toward the right. The percussion-note of the abdomen is flat, except in the dependent regions on the right side and over the ascending colon. The border of the spleen is smooth, except in the umbilical region at the extreme right, where the organ is notched and uneven. It is about three or four inches thick along its palpable border; pressure does not cause pain.

On April 12th a report from the patient stated that he felt weaker, his appetite was fair, bowels regular, and that pressure-symptoms on lying in bed were increasing. Standing and walking are becoming difficult because of the great weight of the spleen. All other symptoms remain unchanged.

The quantity of urine voided in twenty-four hours was 760 c.c, specific gravity 1029, strongly acid; there was neither albumin nor sugar present; urea, 2.9 per cent.; total quantity in twenty-four hours, 21.4 grammes; uric acid, 1.56 grammes in twenty-four hours, or 0.2 per cent.

Blood Examination. The following table demonstrates clearly the characteristic changes found in the blood, with differential counts:

Date.	Red cells.	White cells.	Hæm. per cent. (Gowers).	Differential count per cent.							Remarks.
				Polymorphonuclear neutrophiles.	Myelocytes	Lymphocytes.	Eosinophiles.	Basophiles.	Transitional.	Normoblasts.	
Jan. 25	3,200,000	320,000	62	57	31	4.4	6.5	Few	Few	Many	Many eosinophilic myelocytes and dwarf cells; some microcytosis and poikilocytosis.
Mar. 10	3,280,000	132,000	62	52	38	4.1	5.7	Few	Few	Many	A few megaloblasts, one 19 by 22 μ in diameter; otherwise as above.
Mar. 17	3,300,000	162,000	64	57	34	4.2	4.7	Many	Few	Many	Fewer normoblasts, but still plentiful; many eosinophilic myelocytes.
Mar. 24	3,320,000	127,000	62	67	22	4.5	6	Few	Few	Few	Marked microcytosis and poikilocytosis.
Mar. 31	3,200,000	124,000	58	69	16	6	3.5	4.5	Few	Very many	Nucleated reds in great numbers.
Apr. 7	3,320,000	126,000	56	65	17	7.5	5.5	3	Few	Many	Red cells decidedly pale. Poikilocytosis marked.
Apr. 16	2,922,000	121,500	55	68	17.5	6.5	5.2	Very few	Few	Very many	Red cells pale; numerous megaloblasts.

On December 31, 1899, the first blood examination was made. This examination is not included in the table which accompanies the paper, because no differential count of leucocytes was made. Dr. Larkin reported hæmoglobin, 52 per cent.; red count, 3,286,000; leucocytes, 320,000; color index, 0.8. There was an increase in the polynuclear

neutrophiles and myelocytes. Normoblasts were found; there were microcytosis, moderate macrocytosis, and poikilocytosis. Another examination made February 9, 1900, not included in the table, showed hæmoglobin 49 per cent.; 2,680,000 reds; 240,000 whites; color index, 0.9 per cent. The gross microscopical find is the same as December 31, 1899.

The differential counts showing the enormous percentage of myelocytes brand the case as one of splenic-myelogenous leukæmia. The large number of myelocytes may be considered pathognomonic. The average of these in our case is 26 per cent. At one time, before the tuberculous process was far advanced, we found 38 per cent. There is a marked relative reduction in the number of lymphocytes which vary in the counts from 4.1 per cent. to 7.5 per cent. The varieties blend; atypical and transitional forms are plentiful. The eosinophiles are increased actually and relatively. Many of these are myelocytes and dwarf cells.

This latter condition is frequently present in splenic-myelogenous leukæmia, but it is not pathognomonic. The basophiles or "mastzellen" of Ehrlich are plentiful, but this increase is neither characteristic nor has it pathological significance. The number and condition of the red cells is typical. The usual mild anæmia with slight changes in the size and shape of the erythrocytes is present. The count ranges between 2,922,000 and 3,320,000. The presence in the blood of large numbers of normoblasts with occasional megaloblasts without the symptoms of grave anæmia is characteristic of splenic-myelogenous leukæmia, and is due to the involvement of the bone-marrow. The hæmoglobin percentage is absolutely and relatively diminished. With the advance of the tuberculosis in our case the red cells change but little. In spite of increasing debility and great exhaustion there is practically no reduction in their number nor change in their condition. Relatively high counts are frequently made in advanced tuberculosis. The concentration of the blood resulting from excessive sweating and expectoration accounts for this condition (Cabot[1]).

We find a gradual and steady decrease in the total number of leucocytes, but an increase in the percentage of polymorphonuclear neutrophiles, a decrease in the number of myelocytes, and an increase in the number of lymphocytes as the tuberculous process advances. The blood, however, retains all of the characteristics of splenic-myelogenous leukæmia.

In connection with the study of the blood in this case, it is exceedingly interesting to note the changes which follow as the tuberculous process advances.

We have been able to find in medical literature four well authenticated cases of leukæmia with tuberculosis which we shall consider later

in this paper, the blood counts of which we shall consider at this point (Quincke,[2] Stintzing,[3] Lichtheim,[4] Baldwin).[5]

In the case of Quincke,[2] which was, in all probability, a case of mixed leukæmia of the splenic-myelogenous and lymphatic varieties, acute miliary tuberculosis supervened. With increase of the tuberculous symptoms there was, as in our case, a marked reduction of characteristic leucocytes. With this reduction and disorganizing processes in the lung the spleen and liver enlargements receded materially.

In Stinzing's[3] case, which was in all probability one of lymphatic leukæmia associated with chronic tuberculosis, the blood at first showed moderate leukæmia (1 to 100), with a normal red count. With a progression of the tuberculosis and cavity formation at the apices and the presence of tubercle bacilli in the sputum the leukæmia improved. The author says that the lymphatics were less enlarged and there was a positive reduction of leucocytes, the proportion changing materially (1 to 150).

Lichtheim's[4] case, which is mentioned by Baldwin,[5] is not of the splenic-myelogenous variety, with tuberculosis, but is of lymphatic character. In the report of this case Lichtheim presents a table which shows a marked reduction in the number of leucocytes as the tuberculosis progresses. The first count, made on November 22, 1896, showed 40 per cent. hæmoglobin; 2,000,000 red corpuscles; 250,000 whites; the relative proportion of whites to reds, 1 to 8. On December 28, 1896, the number of whites had fallen to 82,000, the reds increased to 2,800,000. On February 19th following the count of the white corpuscles was 8900; the reds had increased to 3,300,000. The proportion of white corpuscles to red, it will be noted, was changed with the advancing tuberculosis from 1 to 8 to a count showing 1 white corpuscle to 370 reds. Indeed, Lichtheim in his article makes the statement that at this time no one would have dreamed from a simple blood-count that the patient had ever had leukæmia. In Lichtheim's case with an advancing tuberculosis the spleen and lymphatic glands were much reduced in size.

Baldwin's[5] case of lymphatic leukæmia complicated with tuberculosis, recently reported, stands alone, so far as we have been able to decide from the study of the literature at our command, in presenting full and repeated differential blood counts. The diagnosis was confirmed post-mortem. Unfortunately, there were no blood counts made early in the history of this case. The first examination reported was made on October 1, 1897, when 695,000 leucocytes and 3,010,000 red corpuscles were found (1 to 4½). The last count was made December 9, 1897, and showed 959,500 leucocytes, 2,435,500 red corpuscles (1 to 2½). The patient died on December 10, 1897, one day after the last count had been made. In this case with an advancing tuberculosis there was a

marked increase in the number of leucocytes, with a decrease in the number of erythrocytes.

The case which we report is the first of splenic-myelogenous leukæmia with tuberculosis of which we have knowledge, from a study of the literature at our command, in which repeated differential counts have been made. Without these the true character of the leukæmia cannot be decided; with them we can reach positive conclusions. In this belief we are supported by Muir[6] and Bramwell.[7]

We have been much interested in the study of the literature which relates to the changes which take place in leukæmic blood as the result of added infection. It may be assumed to be a fact that with added infection of whatever nature there is likely to be a marked reduction in the number of leucocytes.

Thus, Eisenlohr[8] reports the case of a patient with splenic-myelogenous leukæmia who contracted typhoid fever. The added infection proved sufficient to reduce very markedly the number of leucocytes.

Heuck[9] reports a case of acute infection added to leukæmia in which there was the same decided reduction of white cells.

Mueller,[10] in a case of leukæmia complicated with sepsis, found a reduction in the number of whites from 246,900 to 57,300. Kovac's[11] case of leukæmia complicated with influenza showed a change from 67,000 to 17,000 white corpuscles.

The very decided increase in the elimination of uric acid in our case deserves special mention. This, of course, is not surprising if we subscribe to the theory of Horbaczewski, which he has so graphically brought to the notice of the profession. In the study of this question we find the literature of the subject contradictory and unsatisfactory.

Thus in three cases reported by Laache,[12] Von Noorden,[13] and Quincke,[14] where disease was associated with exceedingly low white counts, the quantity of uric acid in the urine was increased and was found to be 2.2 grammes, 1.6 grammes and 1.8 grammes respectively.

Levi,[15] in his exhaustive article, makes the statement: "We are not to forget that the elimination of uric acid and its derivatives gives no exact clue to the quantity of the uric acid produced within the body. Too much honor is bestowed upon the leucocytes of the blood if we attribute to them alone the changed and increased elimination of uric acid in these cases."

Richter[16] thinks that our clinical and experimental experiences prove that the association of leucocytes and uric-acid excretion cannot be ignored; but yet he says, "All factors considered, they are not sufficient in the present state of our knowledge to permit positive conclusions on this association."

A few words concerning the lung changes in leukæmia may not be out of place.

In Stengel's[17] exhaustive article on leukæmia, under the head of "Respiratory Symptoms," we find the following statement: "Considerable involvement of the lungs themselves (Deiter) may occur, and the infiltrated areas may suffer necrosis and break down, with the formation of cavities resembling those of tuberculosis" (Boettcher).

Reference to the original paper of Deiter[18] shows that the author in considering this subject makes no mention of tuberculosis. He, as well as Birch-Hirschfeld,[19] mentions the occurrence of heteroplastic-lymphoma in the lung as being characteristic of leukæmia. Boettcher's[20] article quotes Ehrlich's[21] statistics given in his Inaugural Dissertation in 1862, in which ninety-eight cases of leukæmia were reported, in twelve of which he imagined that he found tuberculous complication. He does not state in how many of these the lung was involved, and from the fact that disorganizing processes are not uncommon in leukæmic infiltrations and at that early day bacteriological determination was not practised, it seems to us that Boettcher[20] is justified in stating that "without wishing to deny the complication of the two processes I am not satisfied that in those cases where pulmonary tuberculosis has been considered the author has differentiated leukæmic disease of the lung and pulmonary tuberculosis." He says, still further, "In spite of the fact that post-mortem macroscopical experiences seemed to favor the diagnosis of tuberculosis, yet later it was found that this was not correct."

The lymphatic enlargements in the lung may undergo retrograde metamorphoses just as often happens with lymphatic growths in the intestine.

Virchow[22] calls attention to the small lymphoid masses in the pulmonary tissue, particularly in the respiratory mucosa associated with leukæmia. He has found these resembling tubercle on the epiglottis, the aryepiglottic folds, at times reaching into the bronchi. He says "these resemble tubercle, but are not true tubercle structures."

In Epstein's[23] exhaustive article, which includes sixteen post-mortems in cases of acute leukæmia, there was no mention of tuberculosis as a complication, nor were any suspicious lung changes found.

Bramwell,[24] in his recent work on anæmia, and Hoffman,[25] in his *Constitutions Krankheiten*, make no mention of the association of tuberculosis with leukæmia.

Muir[6] says: "In the lymphatic form of the disease the connective tissue of the lungs may be the seat of leucocytic infiltration. The walls of the bronchi and the peribronchial tissue are chiefly affected, and the condition may be diffused or localized so as to form thickening. This change, which may be found only on microscopical examination, is of the same nature as that occurring in the connective tissue of other organs. On microscopical examination also many of the small vessels may be found plugged with leucocytic thrombi, and hemorrhages may

be seen around them. The lungs are generally œdematous, and various other conditions may be present as complications."

Unfortunately, the last sentence of this quotation is not sufficiently definite to justify the conclusion that the author has met tuberculosis of the lung associated with leukæmia.

It is very difficult in our case to decide whether there was a latent tuberculous deposit in the lung before the advent of leukæmia. The early history of the case, including the abdominal symptoms, the characteristic changes in the cellular elements of the blood after the positive evidences of advancing tuberculosis, lead us to believe that pulmonary tuberculosis was superadded, or, if present and latent, did not become active until a number of months after the beginning of the splenic-myelogenous disease.

The case of Quincke,[2] to which we have already referred, was reported by him at the sixty-second annual meeting of the Association of German Scientists and Physicians in Heidelberg. Our study of the report of this case leads us to conclude that there was a mixed splenic-myelogenous and lymphatic leukæmia in which true miliary tuberculosis supervened. In this case no differential counts are reported. We are somewhat confused by Quincke's statement that "in the place of leucocytes there were in the blood large masses of fine, granular protoplasm and blood-plaques." Possibly these "granular masses" were eosinophiles. The spleen and liver enlargement receded materially as the tuberculosis advanced.

At the same meeting Stintzing[3] reported an analogous case in which the tuberculous process was chronic. The patient, who was examined twelve months before, was found with enlarged glands, moderately enlarged spleen, and infiltrating disease of the right apex. The blood examination showed moderate leukæmia (1 to 100), with normal red counts. After six months pulmonary infiltration increased, disorganization was progressive, cavity formation followed at the apices, and tubercle bacilli became plentiful in the sputum. Leukæmic symptoms improved with the advancing tuberculosis. Stintzing[3] reports this case to prove that chronic tuberculosis may materially influence the course of leukæmia.

Lichtheim's[4] case was one of lymphatic leukæmia with infiltrating tubercle. The patient was twenty-six years of age, a male, who twice during the two preceding years had suffered from intestinal disturbances with fever. Seven months before death there was epistaxis, and a splenic tumor was discoverable. The cervical glands were markedly enlarged. The history of the case leads us to conclude that tuberculosis preceded leukæmia. In this case, as we have already mentioned, there was a marked reduction of the leucocytes as the disease advanced. There is no record of a differential count.

Baldwin's[5] case was one of lymphatic leukæmia with tuberculosis. The post-mortem examination revealed characteristic lesions. Baldwin was fortunate in obtaining post-mortem evidence of the correctness of his diagnosis, as tubercle bacilli were never discovered in the sputum.

Weidner's[26] case, which has been suspected to have been one of splenic-myelogenous leukæmia complicated with tuberculosis (Baldwin[5]), cannot be considered in connection with these positive cases, in spite of the fact that the post-mortem showed enlarged and caseous retroperitoneal and mesenteric glands. In this case the lungs were found normal. No microscopical or bacteriological examinations of the caseous glands were made.

We have felt justified in reporting our case as one of tuberculosis associated with splenic-myelogenous leukæmia, because of the physical signs referable to the lung, spleen, and liver, the laryngeal ulceration, the presence of tubercle bacilli in the sputum, the pathognomonic changes in the cellular elements of the blood, and the convincing differential counts.

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HEMORRHAGIC TYPHOID FEVER.[1]

By Augustus A. Eshner, M.D.,
PROFESSOR OF CLINICAL MEDICINE IN THE PHILADELPHIA POLYCLINIC; PHYSICIAN TO THE PHILADELPHIA HOSPITAL; ASSISTANT PHYSICIAN TO THE PHILADELPHIA ORTHOPÆDIC HOSPITAL AND INFIRMARY FOR NERVOUS DISEASES,

AND

T. H. Weisenberg, M.D.,
RESIDENT PHYSICIAN IN THE PHILADELPHIA HOSPITAL.

Escape of blood may take place by rhexis, in consequence of traumatic lesions or disease of the vessels; or by diapedesis, as a result of increased blood pressure in the capillaries and veins, or of increased permeability of the vessel walls. The last-named condition may be due to mechanical, chemic, and thermic influences as well as others that affect the nutrition of the vessels, including the state of the blood itself and the nervous supply.

Hemorrhage may occur as the sole or the principal or most constant symptom, as in the course of such diseases as purpura, scurvy, hæmophilia, or as a concomitant of a large number of diseases, apart from local lesions of bloodvessels. It may be local, being confined to inflamed or otherwise diseased structures; or it may be wide-spread, and obviously the result of constitutional disturbance. Under the latter condition it seems not unreasonable to attribute it to changes in the blood or in the vessels, or in both conjointly, resulting perhaps in part from the presence of toxic substances in the circulation and in part from abnormal elevation of temperature when this is additionally present. Such extravasations of the blood may, therefore, be expected to occur in the course of any of the infectious diseases, and they have been so observed, though not as a rule or at all commonly, among others in typhoid fever.

While epistaxis is one of the most common symptoms of typhoid fever, and enterorrhagia is not an infrequent complication, generalized hemorrhage occurs but rarely. To cases attended with the last-named condition the designation hemorrhagic typhoid fever has been applied. The bleeding may take place from all parts of the body, beneath the skin, and into the mucous membranes, as well as the serous cavities. It may, in rare instances, represent the terminal stage of an attack of fulminant typhoid fever, although it generally occurs at the height or at a later stage in cases at first pursuing an ordinary course, or in cases of protracted duration. It has been observed also during a relapse. The bleeding generally first takes place from the nose. At the same

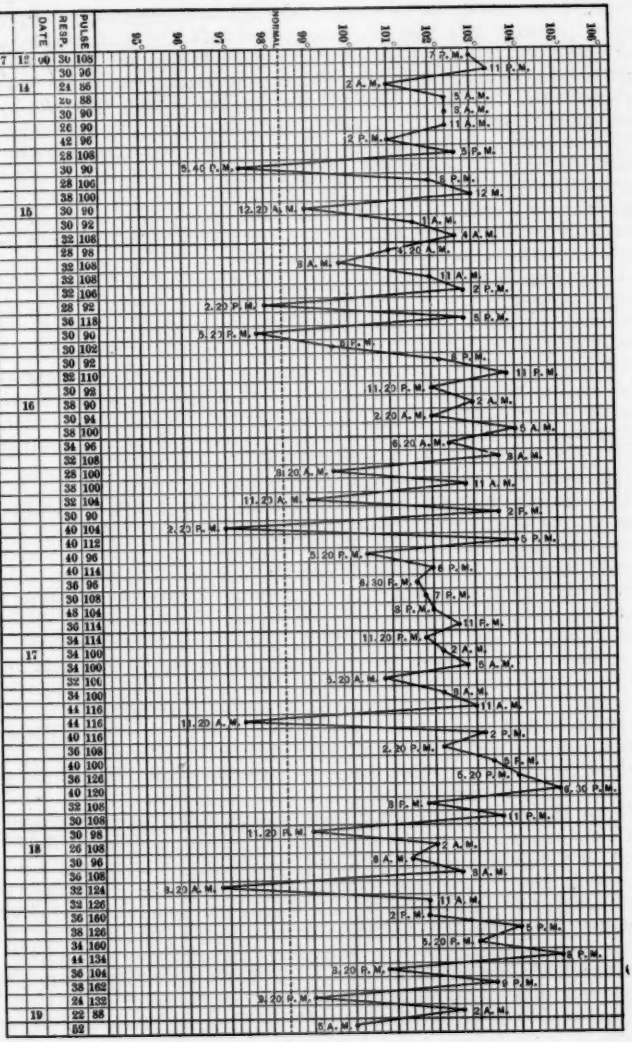
[1] Presented to the Pan-American Medical Congress, held at Havana, Cuba, February 4, 1901.

time or shortly afterward blood escapes from the discolored and spongy gums. Next, petechiæ appear in the skin covering the trunk and the extremities among the roseolæ, which become hemorrhagic only in part, if at all. In cases of especial severity extensive, deep-seated extravasations take place into the subcutaneous connective tissue even beneath the scalp. In not a few cases meningeal or cerebral hemorrhage occurs. More frequently intestinal hemorrhage takes place—at times in such abundance and in such rapid succession as to be the direct cause of death. Hemorrhage from the genito-urinary organs is less common. Occurring in pregnant women, abortion is invariable, and death may result in consequence of failure to control the hemorrhage. Hæmoptysis is the least common variety of hemorrhage, resulting from infarction of the lung or from bleeding from the bronchial, tracheal, or laryngeal mucous membrane. The hemorrhage may further be complicated by gangrene or ulceration. The earlier and the more extensive the bleeding and the worse the general condition the more unfavorable is the prognosis. The complication is so uncommon that the report of two fatal cases that came under observation recently would seem justified. In one the bleeding was wide-spread, while in the other it seemed confined to the skin.

Case I.—A man, aged thirty-nine years, who had been a heavy drinker, was admitted to the Philadelphia Hospital, July 13, 1900, in a state of delirium, on what, from the statement of his friends, was estimated to be the twenty-second day of his illness, although he had not gone to bed, but had continued in his debauchery. He complained of muscular pain, frontal headache, and sleeplessness. There had been no epistaxis and no diarrhœa. The man was well nourished and presented a dusky-brown appearance. He looked stupid and apathetic, the eyes being dull and staring. The tongue was brown and fissured, and sordes were present on the lips and teeth. The lower lip was, besides, the seat of a number of herpetic vesicles. The chest, which was well built and muscular, was the seat of a diffuse erythematous rash at the roots of the hair. The pulmonary expansion was good and equal. The abdomen was tympanitic, although the liver dulness was evident. There was some tenderness on pressure in the right iliac fossa. Both the chest and the abdomen were the seat of a rose-colored, maculo-papular rash, disappearing on pressure. The spleen was slightly enlarged at first, but only later became palpable. Heart, lungs, and liver exhibited no abnormality. The pulse was rapid, weak, and dicrotic. The urine contained albumin and blood cells, and yielded the diazo-reaction. No response to the Gruber-Widal test could, however, be secured at this time, although it appeared several days later.

The nervous symptoms in the case were marked, the delirium persisting, and restlessness and twitching of the muscles of the arms and legs appearing. The patient reacted well to cold plunges, and he took his nourishment well. On the sixth day after admission a rose-red eruption, consisting of elevated areas one-eighth inch in diameter,

FIG. 1.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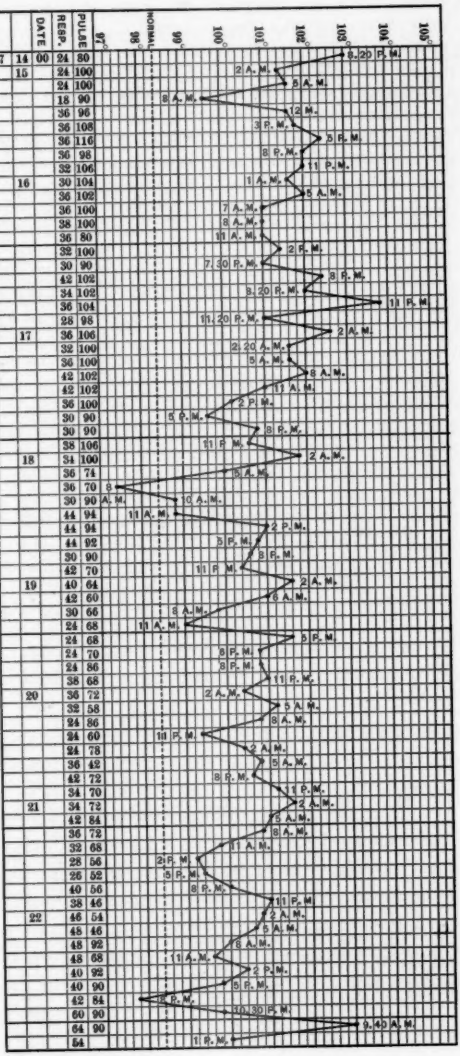
yielding a shot-like sensation to the finger and not disappearing on pressure, appeared on the legs just below the knees, in strikingly symmetrical distribution. At the same time bluish blotches of irregular shape, from one-eighth to one-quarter inch in diameter, not disappearing on pressure and palpable directly beneath the skin, appeared on the upper part of the chest and shoulders. The patient also began to pass blood repeatedly from the bladder, and incontinence of urine was noted for the first time. Later in the day hemorrhage from the bowel was repeated thrice in the course of an hour. The hemorrhagic eruption had now extended all over the body, the areas being bluish in color, irregular in shape, and varying from three-quarters to one and one-half inches in diameter. An extravasation of blood took place also into the cornea of the left eye. The condition of asthenia grew gradually more marked and coma more profound, until death took place on the seventh day after admission.

Upon post-mortem examination the body was found covered with purpuric spots. The fatty layer of the abdomen presented a peculiar orange-yellow color, and was the seat of extravasations of blood. The peritoneal cavity contained a considerable amount of free blood. The peritoneal surface of the stomach and the intestines, the mesentery, and all the remaining abdominal viscera, especially the bladder, as well as the chest wall and the pericardium, were the seat of hemorrhagic extravasations, varying from one-eighth inch to three inches in diameter. The pleural and pericardial sacs also contained blood. The myocardium was involved in parenchymatous degeneration. The lungs were intensely congested and each contained a large infarct posteriorly. The spleen was enlarged and mushy. A Gruber-Widal test made from this organ yielded a positive reaction. The kidneys were intensely congested and the seat of parenchymatous degeneration. Their pelves and pyramids were filled with clots. The adrenal bodies, the pancreas, and the walls of the stomach and intestines were also the seat of hemorrhage. The liver was in a state of parenchymatous degeneration. The bladder was filled with an enormous blood clot, and its walls were constituted of one large blood clot. The intestines were congested throughout, and hemorrhage was most abundant at the ileo-cæcal valve and in the colon just beyond. The ileum was the seat of five ulcers in varying stages of development, being almost perforated and surrounded by a ring of dense connective tissue. The brain and its membranes were congested, but normal in structure.

Case II.—A laboring man, aged twenty-eight years, addicted to alcoholic excess, was admitted to the Philadelphia Hospital, July 14, 1900, in a state of delirium and restlessness, with a history of having been sick for a week with weakness and "malaria." His face was dull, heavy, and expressionless; the tongue was dry and covered with a whitish fur. Heart, lungs, and liver exhibited no abnormality. The spleen was enlarged but not palpable. The abdomen was tender on pressure, and gurgling could be elicited in the right iliac fossa. The pulse was rapid, weak, and dicrotic. The extremities were slightly œdematous. The urine contained albumin, but no tube-casts. In the course of three days a rose-colored, maculo-papular eruption appeared on the abdomen and chest, disappearing on pressure. Temporary improvement ensued, but nervous symptoms again became pronounced, with carphology and subsultus. The Gruber-Widal reaction was now

FIG. 2.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9.40 A.M.
1 P.M.

negative, but five days later it was positive. On the fifth day after admission the area of herpetic percussion dulness appeared diminished, and tenderness was present over the liver. Gurgling could be elicited in the abdomen, which was scaphoid in shape and tender. The area of splenic percussion dulness was increased. The tongue was dry, brown, and fissured, and the lips and teeth were the seat of sordes. The conjunctivæ were icteric. The pulse was slow and weak. The patient was sweating profusely. The number of red blood-corpuscles was normal, and a stained specimen of blood exhibited leucocytosis. On the following day a peculiar, dark, rusty-red, papular eruption appeared on the chest and the abdomen, the areas being variable in size, averaging one-eighth inch in diameter and not disappearing on pressure. The urine was now being voided involuntarily, and the weakness appeared more pronounced. By the next day the rash covered the entire chest and abdomen, and had extended to the arms and the legs. It preserved its previous character, although it was darker in color. A peculiarly offensive odor was at this time noticed about the patient. The knee-jerks were enfeebled, and neither the Babinski reflex nor Kernig's sign was present, although later Kernig's sign could be elicited. Divergent strabismus developed and the head became retracted, while the patient was exceedingly restless and exhibited subsultus and carphology. On examination of the blood a second time the number of red corpuscles was found to be more than 6,000,000, and the number of colorless cells 17,600 per cubic millimetre. Malarial plasmodia were not present. The urine now contained albumin and also granular and bloody tube-casts. The patient became comatose and gradually weaker, and death ensued on the ninth day after admission.

Post-mortem examination revealed typical intestinal lesions of typhoid fever, namely, enlargement of the spleen and ulceration of the ileum. The brain and the spinal cord exhibited no abnormality except roughening of the membranes covering the inferior aspect of the cerebellum. Inoculations from the brain, the cord, and the spleen failed to yield cultures. The kidneys exhibited a slight degree of inflammation. The liver was pale and friable, and appeared to be in a state of parenchymatous degeneration.

The question may fairly be raised whether the hemorrhagic character in these cases is in any way related to the primary disease. Doubt at once arises from the fact that the complication is so rare, and, further, that it is occasionally observed in connection with other infectious diseases, as well as independently at times. The thought naturally suggests itself that we may have to do with a hemorrhagic purpura occurring in the course of and perhaps predisposed to by the typhoid fever; but even this does not help us greatly, as we are as yet uninformed as to the nature of purpura and as to its etiology and associations.

A STUDY OF CONGENITAL SARCOMA OF THE LIVER AND SUPRARENAL.

WITH REPORT OF A CASE.

By William Pepper, M.D.,

ASSISTANT INSTRUCTOR IN CLINICAL MEDICINE, UNIVERSITY OF PENNSYLVANIA; PATHOLOGIST TO ST. CHRISTOPHER'S HOSPITAL FOR CHILDREN; VOLUNTEER ASSOCIATE, WILLIAM PEPPER LABORATORY OF CLINICAL MEDICINE.

(*From the William Pepper Laboratory of Clinical Medicine.*)

Case I.—B. L., a female child, was a private patient of Dr. McCreight, to whom, with Dr. J. H. McKee, I am indebted for this history.

Family History. Maternal grandmother died of dropsy, and grandfather of paralysis. Paternal grandmother living and well; the grandfather died suddenly of kidney trouble. The husband was insane seven years ago; was jealous of his wife; has not, however, been violent since, although occasionally has visual hallucinations. He denies any syphilitic infection. The mother suffers only from indigestion; has had seven children, only one of whom, a six-months baby, has died.

Previous and Present History. Born August 19, 1900. She seemed perfectly well until September 14th. Mother then noticed protruding navel. The next day the abdomen appeared large and shiny. Since then the abdomen has grown rapidly. The baby has lost some flesh and drinks a great deal. No appreciable fever. Bowels are loose and green in color. She seems to have some colic at times. Dr. McCreight first saw the child when it was four weeks old, and states that the abdomen increased visibly from day to day until death.

At an examination made on September 27th, when the child was five weeks old, the following notes were made:

Inspection. Much distended abdomen, almost symmetrical in character. Pouting umbilicus. Enlarged superficial veins. Marked bulging in both lumbar regions posteriorly, but especially on the right side.

Palpation. The abdomen is very tense anteriorly, and from the costal border to about one inch below the umbilicus in the median line gives the sensation of a firm, heavy, resistant growth. Below this point there is gurgling in the bowel on pressure. In the right iliac fossa the growth fills the whole area. Palpation readily indicates a sharp border, almost unquestionably liver, and slightly to the left of the umbilicus is found a distinct notch. This border dips deeply into the right iliac fossa. The mass is lifted markedly by deep pressure in either renal region, but the greatest sense of resistance is experienced in the right lumbar region posteriorly.

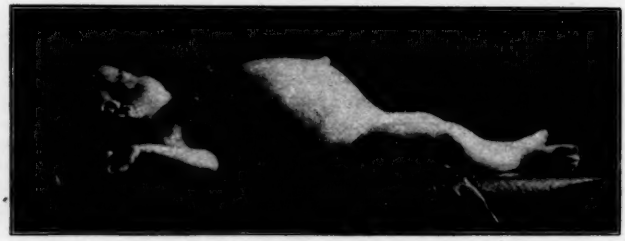
Percussion. The hepatic dulness does not extend above the level of the right costal border anteriorly. From the border down to below the umbilicus in the median line, and almost to Poupart's ligament in the right iliac fossa, there is absolute flatness. Posteriorly in the prone position there is absolute flatness in the right lumbar region and colic tympany over the left side.

The child died in convulsions on October 3, 1900, aged six and a half weeks. It had nursed until the last day. The body had wasted but

very little, and the abdomen had grown so tense that the skin could not be pinched between the fingers. A few small hemorrhagic petechiæ had formed in either lumbar region a few days before death.

Post-mortem was performed by Dr. J. C. Gittings, at that time pathologist to St. Christopher's Hospital. The specimens were given to me for examination, as Dr. Gittings left the city in a few days.

FIG. 1.



From a photograph taken after death.

Body of a female infant, aged six and a half weeks. Well nourished; no eruption; no excoriation or redness around mouth, nose, or anus; no jaundice; no enlarged lymphatics. Protruding abdomen, with pouting umbilicus. The abdomen was completely filled by the liver, which was seen to be much enlarged and bulged out below the costal margin and extended down almost to the symphysis. A minute

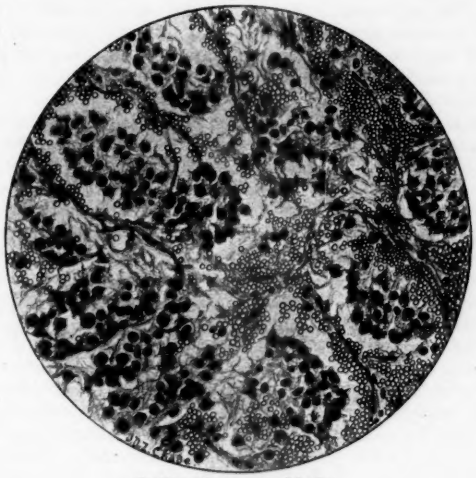
FIG. 2.

Appearance of the surface of a fresh section of the liver.

quantity of serous fluid free in the peritoneal cavity. Lungs crepitant throughout, but congested. Heart normal. Spleen small, dark brown, and soft. Kidneys normal. Left suprarenal normal. Right suprarenal enlarged to the size of an English walnut, firm, and hemorrhagic in appearance. On section the surface presented a yellowish-white, homogeneous character, with scattered areas of hemorrhage. There

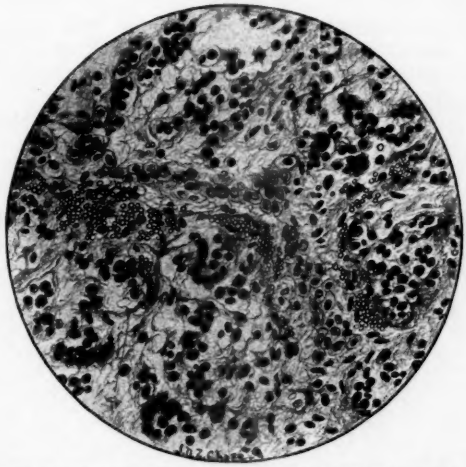
were no abnormal adhesions. The liver weighed two pounds and eight ounces; was uniformly enlarged in all its lobes; no irregularities or

FIG. 3.



Section of suprarenal body.

FIG. 4.



Section of liver, showing infiltrating tumor cells and a band of compressed liver cells.

nodules. The increasing convexity of the right lobe had caused the liver to slip out from beneath the costal margin. The capsule was

smooth and glistening, with reddish and yellowish areas, giving it a mottled or marbled appearance. On section it presented a uniform yellowish-white appearance with small, hemorrhagic areas, and resembled the growth in the suprarenal, though it was not so distinctly hemorrhagic. The appearance suggested a diffuse neoplastic infiltration or a massive transformation. It was with difficulty that one could find any normal hepatic tissue showing acini. There were a few enlarged mesenteric glands, but these were not the seat of any growth.

Microscopical examination was made of sections from lungs, spleen, kidneys, and lymphatic glands, all of which were normal. The study of sections from the growth in the right suprarenal showed that there was still a remnant of the gland left at the periphery of the mass. The tumor was a typical lymphosarcoma, and, stained with van Giesen's method, showed a small amount of fibrous connective tissue in an alveolar arrangement, filled with masses of loosely packed, round, lymphoid cells, about twice the size of a red corpuscle. The growth was very hemorrhagic, and the blood was not confined to the vessels, but was free throughout the tissue. Sections from various portions of the liver showed the same lymphosarcomatous growth, though less hemorrhagic, and in places small islets of liver cells surrounded and infiltrated by the growth or compressed and squeezed into narrow bands. In no place could a typical secondary nodule be found surrounded by liver tissue, because the remnants of liver structure were so small and so surrounded by the growth that such a condition was impossible. The amount of fibrous connective tissue was not prominent in any portion of the tumor, being always subordinate to the number of lymphoid cells.

A very careful review of the literature upon the subject of primary sarcoma of the suprarenal and of the same in the liver was intensely interesting, because I found five cases of such striking similarity to the one I have just reported that I have thought it important to abstract them quite fully, to show that we have here a special type of congenital malignant disease, with its own peculiar symptoms and pathological findings.

Case II. *Congenital round-celled sarcoma of the liver.*—George Heaton (*Transactions of the Pathological Society of London*, 1897–98, vol. xlix., p. 140). The patient, a girl, aged eight weeks, was admitted into the Children's Hospital, Birmingham, with a history of rapid abdominal enlargement, with general wasting. The abdomen was noticed at birth to be unduly prominent, and this prominence increased rapidly until admission a few days before death. During a week while the child was under observation the abdomen increased in circumference one and a half inches. It was distended by a tumor occupying the epigastric, the right and left hypochondriac regions, descending downward below the umbilicus. The tumor had the characteristic signs of an enlarged liver. There was no jaundice and no ascites. The mother and father were in every way healthy. There were two other children alive and well. There was no evidence whatever of any syphilitic taint. The child sank gradually, and died aged nine weeks.

Post-mortem Examination. There was much general wasting of the body. The abdomen was distended by a uniform swelling occupying

the position of the liver and extending considerably below the level of the umbilicus. The spleen was of average size and showed no lesion. The kidneys were anæmic. There was no enlargement of any of the abdominal lymphatic glands nor any evidence of old or recent peritonitis. The right suprarenal capsule was enlarged by a nodule about the size of a marble, occupying its posterior half. On section it was dark red. The left suprarenal capsule showed no abnormality. The liver was greatly enlarged and weighed forty-nine ounces. The enlargement was uniform, all its lobes being equally affected. The surface was smooth and glistening, the peritoneal coat being normal in appearance, and there was no thickening of the capsule. In the fresh state the surface had a most peculiar mottled or marbled appearance, being covered with numerous red patches, separated from one another by pale, dull areas. A section of the liver presented the same appearance. There were numerous patches of a dark red color surrounded by zones of a lighter color. The gall-bladder was contracted and empty. The sulcus in which it lay did not nearly reach the free margin of the organ, indicating a rapid enlargement of the organ in a downward direction. Microscopical examination of the enlarged liver showed: 1. Areas in which there was considerable vascular enlargement corresponding to the dark red patches seen with the naked eye. 2. Liver cells showing apparently no change. 3. Areas of small cell growth corresponding to the pale patches seen by the naked eye. These areas contained large numbers of round cells, fairly uniform in size and rather densely packed together. At the margin of these areas the cells were seen infiltrating between the liver cells, even extending some distance away from the main collection. Where this infiltration was taking place the liver cells showed a considerable amount of alteration, being atrophied and in many instances so changed that their distinctive characters were lost, and they appeared as irregular atrophied cells. The organ would, therefore, appear to have been the seat of a diffuse round-cell sarcoma which had begun primarily within its substance during intra-uterine life and caused a rapid, uniform enlargement, with partial disappearance and destruction of the liver cells. The diagnosis of sarcoma is supported by the great and rapid enlargement of the organ, the absence of any enlargement of the spleen or lymphatic glands, and the presence of a secondary nodule of an exactly similar character in the right suprarenal body.

Case III. *Sarcoma of suprarenal capsules in a child, aged seven weeks.*—John Orr (*Edinburgh Medical Journal*, September, 1900) reports the case of a female child, aged seven weeks, brought to the dispensary on account of "swelling of the belly." The history given was that the infant was born at term at a maternity hospital, apparently normal, and no evidence of disease detected by the physician in charge. A fortnight before the child came under Dr. Orr's care the mother had noticed that the abdomen was unduly prominent and was increasing gradually. The child otherwise seemed well and took nourishment naturally. It was the youngest of a family of eight, who, except the fourth, an imbecile, were born healthy and have remained so. The only constitutional taint on either side of the family was an old tubercular knee-joint of the father. The child suffered no pain, and was well nourished and showed no discoloration or pigmentation of the skin. On examination the following was noted: The superficial abdominal

veins were distended, especially in the upper part. Palpation over the distended upper abdomen revealed what was taken to be an enlarged liver and spleen, extending to a little below the umbilicus. Both these swellings were perfectly smooth and uniform. Circumference just above the navel, the most prominent part, was seventeen and one-half inches. No glandular enlargements. The blood showed at first a leucocytosis, which later disappeared. The child lost weight and the abdomen increased in girth, and the two areas of enlargement and dulness descended into the right and left iliac fossæ respectively. The circumference became nineteen and one-half inches. The child weighed eleven pounds and three ounces. Death occurred nine weeks after the case came under Dr. Orr's care, the child then being four months old. Various diagnoses were discussed. The post-mortem showed, however, that the supposed enlarged spleen was an enlarged left lobe of the liver and that the spleen was normal. The enormous hepatic enlargement was sarcomatous, and the primary seat was in the right suprarenal. Both lobes of the liver were uniformly enlarged. The surface was perfectly smooth, but showed shining through its capsule, which was in no way thickened, a large number of small, white areas, mostly circular, though occasionally irregular, from confluence. The liver weighed just under three pounds. On section these nodules were still more evident. They were of a whitish or yellowish-white color, with hemorrhagic foci here and there. They infiltrated the liver everywhere. All the other organs were healthy except the two suprarenal bodies. In place of the right one there was a large growth, weight seven ounces, which almost hid the kidney from view. The growth was roughly globular, and was surrounded by a firm, fibrous capsule, and there were no firm adhesions. It was soft, of a dark red color like a blood clot, and was spotted with white. It showed no recognizable suprarenal tissue. The left suprarenal had preserved its shape, though enlarged and infiltrated with whitish-yellow nodules of secondary growth. Microscopical examination of pieces of the primary and secondary growths was made, and it was found to be mainly a cellular growth, the cells being chiefly round and averaging from 8 to 10 mm. in diameter, each with a large, deeply staining nucleus and a comparatively thin rim of protoplasm. It was highly vascular. In some few places it was more fibrous, probably older areas. In the latter the fibrous tissue was collected in fairly well-formed alveoli in which the cells lay. Orr calls attention to the peculiarly smooth, uniform character of the secondary hepatic enlargement.

Case IV. *Diffuse sarcoma of the liver, probably congenital.*—R. W. Parker (*Transactions of the Pathological Society of London*, 1880, vol. xxxi.) reports a case of a female child, seen at the age of three weeks on account of swelling and hardness of the abdomen. There had been no jaundice. The child was emaciated, the abdomen distended and in the region of the liver uneven, and there were a few enlarged veins ramifying over it. A hard mass was felt extending from one side to the other and down to the iliac crests. Mercurial inunctions failed to produce any improvement. The child died at the age of five weeks. A partial autopsy was made. Body was much emaciated. Bones appeared normal. Liver filled the abdominal cavity almost entirely. Weighed thirty-two ounces. When first removed it was of a dark plum color, mottled over with patches of a yellowish tint, corresponding, when cut into, to a new growth, which was largely diffused through the

whole liver. This dark color quickly changed to a bright scarlet after removal of the liver from the body. It was obviously due to the presence of blood, with which the organ was distended. The new growth was scattered throughout the entire gland as nodules varying in size from a millet-seed to a walnut. It looked not unlike caseous material, but it could not be shelled out from the liver substance. The surface of the organ was slightly nodulated, its capsule shiny and not thickened. Left lobe was as large as the right. From the lower surface several nodules projected. Gall-bladder rudimentary, kidneys normal, also spleen. There was a mass of new growth between the spleen and left kidney as large as a Tangiers orange. This was the only secondary growth; it was very vascular and soft. Microscopical examination of the liver tumor showed that it was mainly composed of round cells, larger than red blood-corpuscles. The proper gland cells of the liver could not be found in the many sections examined. Even in places where there was no obvious naked-eye change the liver substance was infiltrated with a dense, small cell deposit which quite obscured the liver cells even if they were present. Some areas showed extravasated blood. At the periphery there was an abortive appearance of portal zones. Dr. Parker called this growth a congenital round-celled sarcoma, and rejected the possibility of its being syphilitic.

CASE V. *Congenital tumor of the liver and both suprarenals.*—De Ruyter (*Langenbeck's Archives*, 1890, vol. xl., p. 98) reports the case of a infant whose parents noticed almost immediately after its birth that the abdomen was enlarged and that it was increasing in size from day to day. On the fifth day the child was brought to the clinic; it showed then no abnormalities except enormous distention of the abdomen. Congestion of the veins over this area was marked. The greatest circumference was in the neighborhood of the navel, and was 55 cm. Palpation revealed throughout the whole abdomen an equally elastic resistance. This mass was everywhere smooth and free from inequalities. *Clinical diagnosis.* Suprarenal tumor. For three days the child took a fair quantity of milk, but on the fourth and fifth days refused nourishment. The breathing became more superficial on account of increase in the size of the abdomen. Extensive cyanosis appeared and death followed. *Post-mortem.* Emaciation quite advanced. On opening the abdomen all the organs were hidden by a tumor extending from the costal border to the symphysis. This tumor had preserved the exact form of the liver in which it had developed. The surface was smooth, without any depressions or elevations. There were no adhesions. Spleen normal in size and structure. Occupying the position of the left suprarenal was found a tumor the size of an apple adherent to the kidney, although easily separated from it. Both kidneys were normal. Section of the left suprarenal tumor showed alternate darker and lighter layers. Macroscopically nothing of the suprarenal tissue could be seen. The right suprarenal was half as large as the left and very hemorrhagic. The liver, or, more properly speaking, the liver tumor, was 20 cm. broad, 12.5 cm. high, and 6.5 cm. thick. The whole organ was enlarged proportionately. The capsule was moist, smooth, and glistening, and through it shone a yellow, speckled, brownish-red tissue. The gall-bladder, having retained its normal size, was fully covered by the growth of the right lobe. Section through the liver tumor showed it to be very rich in blood, and that it was made up of a partly yellowish and partly

grayish-red marbled tissue of such indistinct composition that the acinous liver tissue could be no longer detected. Microscopical examination of the liver tumor showed that of the original liver tissue practically nothing remained, but in its place throughout the whole mass was a structure composed of an alveolar framework of connective tissue filled with round cells. The connective tissue was rich in bloodvessels. In a few places were some irregular shaped multinucleated cells, which were thought to have been remnants of the old liver cells. Section of the left suprarenal tumor showed the same condition, except that in one part the cortex of the old suprarenal was still present. The right suprarenal was also involved in the same manner, but was much more hemorrhagic; in fact, a telangiectatic condition was present. Dr. O. Israel examined sections microscopically from the liver tumor and the suprarenals, and diagnosed those from the liver and right suprarenal as congenital lymphosarcoma and those from the left suprarenal as hemorrhagic telangiectic lymphosarcoma.

CASE. VI. *Myxosarcoma of the liver in an infant aged four months.*—Meisenbach (*Weekly Medical Review*, St. Louis, 1884, ix., 433). Female child, apparently normal at birth. About two weeks later the mother noticed a swollen condition of the abdomen, and the navel protruded, teat-like. There is no history of any specific disease. Dr. M. saw the child at the age of eleven weeks. Restless, vomited milk, but nursed pretty well. Abdomen excessively and symmetrically enlarged; the abdominal veins congested, navel protruding. Percussion gave complete dulness extending from the xiphoid cartilage downward into the hypogastric regions, and latterly posteriorly into the lumbar and iliac regions. Palpation detected a firm, smooth, resisting mass filling the entire abdominal cavity, with the exception of a small space in the hypogastric region, where, on deep pressure, the free margin of a firm body could be felt. The child was put on antisyphilitic treatment, with apparently slight decrease in the size of the liver. Died aged sixteen weeks. Abdomen was seventeen inches in circumference. Navel protruding, but flabby. Small amount of fluid in the abdominal cavity. Liver enlarged, filling entire abdominal cavity, bulging up under the xiphoid cartilage, with inferior margin in the hypogastric region. Liver presented smooth, symmetrical enlargement, color mottled, like red castile soap. Spleen and kidneys normal in size, but also mottled.

There is a remarkable resemblance between these six cases, and in order to make this more apparent I shall tabulate the points of similarity.

1. The age at which the first symptom—swelling of the abdomen—was observed was: In Case II. at birth; in Case V. almost immediately after birth; in Case VI. two weeks; in Case IV. three weeks; in Case I. between three and four weeks, and in Case III. five weeks. This seems to prove that these six cases were certainly all congenital, especially when the extensive involvement of the liver is considered.

2. The age at which the children died was as follows: Case V. lived ten days; Case IV. lived five weeks; Case I. lived six weeks; Case II. lived nine weeks, and Case III. and Case VI. lived sixteen weeks. This shows the great malignancy of these growths.

3. The rapidity of growth of these tumors is shown by the fact that in Case V. a difference could be noted from day to day, and the cir-

cumference reached 21.7 inches. Case II. grew rapidly until it came under close observation, and then in one week the abdomen increased one and a half inches; the liver weighed forty-nine ounces. Case I. grew very rapidly, and the liver weighed forty ounces. Case III. grew more gradually, and while under observation increased two inches in nine weeks, and the liver weighed forty-eight ounces. In Case IV. it is not stated how rapidly the abdomen increased, but the liver weighed thirty-two ounces. In Case VI. it is supposed to have decreased slightly, but at death the abdomen measured seventeen inches.

4. The sex of Case V. is not mentioned; all the others were females.

5. Clinical symptoms: Distention of the abdomen was present in all. Wasting was present in varying degrees, although it does not seem to have been as extreme as one might have supposed would have occurred. Ascites is not noted in any case, nor is jaundice or any form of pigmentation of the skin. The children all nursed well until shortly before death. There does not seem to have been much pain, nor is there any mention of a rise of temperature. There was no syphilitic history in any of them, nor were any signs of syphilis found.

6. The growth in the liver in these cases was identical in its appearance and showed the same equally infiltrative proliferation by the sarcomatous tissue, with practically complete destruction of the entire normal liver structure.

7. The growth in the suprarenals exhibited the peculiarity of being very hemorrhagic. In Case II. there was a nodule the size of a marble in the posterior half of the gland. In Case III. there was a mass the size of an apple in the right, and none of the normal tissue remained. The left was also enlarged and infiltrated with small nodules. In Case V. the left was replaced by a tumor the size of an apple, with complete destruction of normal tissue, and the right was half as large. In Case I. the right was as large as a walnut, and the cortical layer of the suprarenal gland still remained around the periphery of the growth. In Case IV. there was a mass of new growth lying between the spleen and the left kidney. (May this not have been the left suprarenal gland, especially since the autopsy is described as being only partial and the suprarenals are not even mentioned?) In Case VI. the suprarenals are also not mentioned. This case is, however, not very fully reported.

8. In all these cases no other organ or part of the body was involved by the new growth.

9. The pathological diagnosis in Case IV. was round-celled sarcoma, the same in Case II. and Case III. In Case VI. myxosarcoma; in Case V. lymphosarcoma, and also in Case I.

10. The primary seat was thought in Cases II., IV., and VI. to have been the liver. In Cases I. and III. the right suprarenal; in Case V. it was simply called a sarcoma of the liver and both suprarenals.

11. The absence of the following points in these cases differentiates them from a possible syphilitc affection of the liver and suprarenals: *a*. There was no overgrowth of connective tissue in any of the tumor masses. *b*. There was no amyloid change in any organ. *c*. There was no perihepatitis. *d*. There was no jaundice. *e*. There was no enlargement of the spleen. *f*. There was very little if any pain in the neighborhood of the liver. *g*. There was no nephritis. *h*. The markedly hemorrhagic condition of the tumors.

These six cases, beside showing such a similarity to one another, have another point of interest, namely, they are so dissimilar to all other reported cases of either primary sarcoma of the suprarenals or of the liver that I have tabulated forty-six cases of primary sarcoma of the suprarenal in addition to those abstracted above, which I have found in a thorough search through the literature. These cases occur in various periods of life. The earliest are one by Cohn, in a nine months' old girl, with a large growth in the left suprarenal and metastases in the skull, kidney, liver, ovary, and ribs; one by Pitt, in a ten months' old boy, with a tumor the size of a hen's egg in the right suprarenal, and a large nodule in the liver, which may have been the primary seat; one by Caillé, in an infant with a tumor in the left suprarenal and a diffuse secondary growth in the neighborhood of the third cervical vertebra; one by Dobbertin in a fourteen months' old girl, who had a growth in the abdomen since birth; an operation was performed, and the left kidney together with the growth were removed together. The diagnosis of sarcoma was not certain, however.

From these cases occurring in infancy others are found up to the two oldest, both sixty-eight years. None of these cases show this infiltrating character of the growth which was so characteristic of the cases that I have abstracted above in full, nor did any of them present the same clinical picture.

In looking over the literature of primary sarcoma of the liver I find few cases, and a number of these are rather doubtful. Among these cases the earliest was one reported by Pepper before the Pathological Society of Philadelphia, in 1873, as a case of primary carcinoma in a child, aged eight weeks. This case was quoted by Arnold and Birch-Hirschfeld as presumably a sarcoma. The growth was a circumscribed nodule in the left lobe of the liver. Gee (*St. Bartholomew's Hospital Reports*, 1873, vol. vii.) reports an early case in a child, aged five months, with countless nodules in the liver. West, quoted by Birch-Hirschfeld, reports another in a boy, aged nine months, with a tumor in the liver and metastases in the lung. Arnold and Birch-Hirschfeld also believe these to be sarcomas. Von Windrath (*Inaug. Dissert.*, Freiburg) reports another case occurring the first year of life, in which the liver, the only organ involved, was the seat of numerous various sized nodules, which were, however, sharply separated from the surrounding tissue.

PRIMARY SARCOMA OF THE SUPRARENAL GLAND.

No.		Sex and age.	Reference.	Clinical course.	Suprarenal; size, etc.	Metastases.	Variety of sarcoma.
1	Ermi quotes Doderlein	M. 47	Dissertation, Erlangen, 1860.	Skin gray; icteric, abdominal tumor.	Right, man's head.	None.	Sarcoma.
2	Kussmaul	M. 47	Wurz. med. Zeitschr., 1863, No. 24.	Cachexia, slightly icteric, mass felt in right hypochondrium.	Right, man's head.	None; only adhesions.	Melanotic sarcoma.
3	Greenhow	F. 12	Trans. Path. Soc. London, 1867, xviii.	No pain or wasting; pneumonia; no pigment.	..... 3×2 in.	None.	Sarcoma.
4	Coats	F. ...	Virchow, Hirsch. Jahr., 1872, i. p. 244.	.....	Left, 18 lbs.	None.	Round & spindle-celled.
5	Eberth	F. 15/12	Virchow's Arch., 1872, lv. p. 518.	Mass felt in abdomen; ascites; diarrhœa.	Right.	Left kidney, peritoneum, and diaphragm.	Myosarcoma.
6	Smith	M. old man.	Dublin Journ. Med. Sci., 1877, lxiv. p. 555.	No pigment.	Right, 8×3½ in.	None.	Cystic sarcoma, round and spindle-cell.
7	West	M. 57	Path. Soc. Lond., 1878–79, vol. xxx.	Bloody sputum; wasting; no discolorat'n of skin; dulness over right lung.	Right, 5×4½×3 in.	Lung and bronchial glands.	Sarcoma.
8	Merkel	M. ...	Ziemssen's Handb. Spec. Path. u. Ther., 1875–80, Bd. viii. 2d half, p. 301.	Skin faint brown.	.....	No secondary.	Sarcoma.
9	Rosenstein	M. 40	Virchow's Archiv, 1881, Bd. lxxxiv.	Pain; loss of appetite; tumor felt; urine normal.	Left, large.	Right suprarenal, kidney, pancreas, heart.	Small-cell sarcoma.
10	Fox	F. 2	Trans. Path. Soc. London, vol. xxxvi. 1885.	Rickety; dusky skin; hairy; abdomen enlarged gradually.	Left, cocoanut.	Lung.	Large-cell sarcoma.
11	Turner	M. 25	Ibid.	Horseshoe kidney.	Both.	Mediastinum involving lung.	Round-cell sarcoma.
12	White	...	Ibid., p. 464.	No pigmentation.	Left.	None.	Sarcoma.
13	Fränkel	F. 18	Virchow's Archiv., 1886, Bd. cili. p. 244.	No pigment; nephritis; retinitis.	Left, fist; right, hazelnut.	In right suprarenal.	Angiosarcoma.
14	Gade	M. 4	Förd. Norske med. Salsk. Kristiania, 1886.	Pain, emaciation, and abdominal tumor.	Both, in one mass, child's head.	Liver.	Round-cell sarcoma.
15	"	M. 6	Ibid.	Supposed to have psoitis or spondilitis.	Right, child's head.	Liver and right lung.	Round-cell sarcoma.
16	Perry	M. 23	British Med. Journ., 1888, vol. i. p. 1382.	Symptoms resembled Addison's disease.	Both, R. ¼ oz., L. 1 oz.	None.	Spindle-cell sarcoma.
17	Blackburn	M. 48	Journ. Amer. Med. Assoc., 1888, vol. x.	Chronic mania; pain; anæmia; not diagnosed.	Right, 97¼ oz. 8⅝×5⅞.	No secondary nodules adherent to adjacent organs.	Large-celled, round-cell sarcoma, cystic.
18	Pilliet	M. 56	Bull. de la Soc. Anatomique de Paris, 1888, p. 716.	Œdema; exhaustion.	Right, 25×20 cent.	Inferior vena cava, right auricle.	Sarcoma.
19	Griffiths	M. 41	British Med. Journ., Feb., 1889.	3 months sick; gangrene of left foot.	Both, 2×1½	None.	Sarcoma.
20	Berdach	M. 55	Wien. med. Wochensch., 1889, xxxix.	Tumor felt, also superficial nodules; pain; skin slightly brown.	Left.	Liver, stomach by continuity, skin.	Small-celled, spindle-cell sarcoma.

No.		Sex and age.	Reference.	Clinical course.	Suprarenal; size, etc.	Metastases.	Variety of sarcoma.
21	De Paoli	M. adult	Per l XXVanno del insegnamento Chirurgico de Francesco Durante, 1889, i. 219.	Operation performed.	Right, man's head.	Liver, spleen, left suprarenal, kidney.	Sarcoma.
22	De Paoli	M. adult	Ibid.	Dyspnœa; subicteric.	Left, fœtal head.	Liver and lung.	Angiosarcoma.
23	Orth	F. 58	Arbeiten aus dem path. Institut in Göttingen. R. Virchow, 50 z. Jubiläum, 1895.	....	Left, fist.	Kidney, right suprarenal, pia mater, brain, lungs, liver, intestine, lymphatics.	Melanosarcoma.
24	Lazarus	... 3½	Med. Press and Circ., London, May, 1894.	Pain; swelling; mass in abdomen, emaciation, while weight increases.	Left, 12 lbs.; child 37 lbs.	None.	Sarcoma.
25	Jores	M. 30	Deutsch. med. Wochenschr., 1894, xx.	Paralytic; no bronzing.	Both, L. fist; R. hen egg.	Brain, kidney, peritoneum, mediastinum, pericardium, pancreas.	Short, small, spindle-cell sarcoma.
26	Earl and Weaver	M. 8	Journ. Amer. Med. Assoc., Dec., 1894.	Jaundice; emaciation; rapid increase in size of liver, with improvement, followed by relapses; obliteration of gall-duct.	Right.	None.	Mixed-cell sarcoma.
27	Cohn	F. 9 mo.	Berl. klin. Wochensch., 1894, p. 266.	Secondary growth in temporal region; mass felt in abdomen.	Left, 13×5×8 c.m.	Skull, kidney, liver, ovary, ribs.	
28	Drozda	M. 68	Jahrb. Wien., k. u. k. Krankenast, 1895, iv. p. 327.	Mass in abdomen.	Left.	Vena cava.	Sarcoma.
29	Lütke-müller	F. 33	Ibid., p. 207.	Weakness, vomiting, emaciation; skin gray-yellow with tinge of brown; black spots on gums.	Both, 5 c.m.× 3.5×1.5	Retroperitoneal glands and mesenteric glands.	Lymphosarcoma.
30	Caillé	... infant.	Archiv. Pediat., Aug., 1895.	Moribund when seen.	Left.	3d cervical vertebra, diffuse growth.	Round-celled sarcoma, cystic.
31	Affleck and Leith	M. 46	Edinb. Hosp. Rep., 1896, vol. iv.	No pigment; no tumor felt.	Right, 5×4×3in.	Liver, left suprarenal, stomach, pleura, ribs, lymphatics.	Mixed or irregular celled.
32	Affleck and Leith	M. 31	Ibid.	.....	Right, with liver 20 lbs. 4 oz.	Liver, kidney.	Small round-cell.
33	Affleck and Leith	F. 50	Ibid.	.....	Left, 5×4×3 inches.	Continuous, with huge retroperitoneal growth 35¼ lbs.	Cystic sarcoma.
34	Pitt	M. 10 mo	Trans. Path. Soc. London, 1897–1898, xlix.	Jaundice; waisting.	Right, hen egg.	May have started in liver.	Small round-cell.
35	Rolleston and Marks	M. 25	Amer. Journ. Med. Sci., Oct., 1898.	Diagnosis: hydatid of liver; no pigment.	Right.	Aortic lymphatic glands, invaded renal vein, liver, and kidney.	Mixed-cell sarcoma.

No.		Sex and age.	Reference.	Clinical course.	Supra-renal; size, etc.	Metastases.	Variety of sarcoma.
36	Rolleston and Marks, shown by Dickinson to Path. Soc. Lond., 1894	M. 57	Amer. Journ. Med. Sci., Oct., 1893.	Hæmaturia and renal tumor for 8 years; resembled Addison's dis.; pigmentation of axillæ, nipples, and body.	Right, with kidney size of man's head.	Pleura and lungs, liver, extending into vena cava, spleen.	Mixed-cell sarcoma.
37	"	F. 38	Ibid.	No jaundice; œdema of legs; inf. vena cava blocked.	Right.	Liver.	Round-cell sarcoma, hemorrh'ge
38	"	F. 55	Ibid.	No jaundice.	.....	Bronchial glands.	Large-cell sarcoma.
39	"	M. 8¾	Ibid.	No jaundice; cerebral symptoms.	Left.	Brain.	Sarcoma.
40	" Muir	M. 31	Ibid.	No pigment.	Right.	Invading liver and kidneys.	Small round cystic sarcoma.
41	"	F. 50	Ibid.	No pigment.	Left.	Large retro-peritoneal tumor, 36½ lbs.	Cystic sarcoma.
42	Finny	M. 66	Dublin Journ. Med. Sci., Nov. 1899.	Skin darker than normal; left lung dull; no fluid on tapping; urine normal.	Left, fœtal head.	Right supra and lung, size of pullet's egg.	Mixed-cell sarcoma, giant cells.
43	Brüchanow	F. 32	Zeitschrift für Heilkunde, 1899, vol. xx.	Operated on for supposed subphrenic abscess.	Right, 18 cm. in diameter.	None.	Fibromyxosarcoma.
44	"	F. 58	Ibid.	Abdominal tum., explor. puncture.	Left, man's head.	Few on greater curvature of stomach.	Spindle-cell sarcoma.
45	"	M. 68	Ibid.	Ascites.	Right, 5 cm. in diameter.	None.	Angiosarcoma.
46	Dobbertin	F. 14 mo	Beitr. z. path. Anat. u. z. allg. Path., xxviii. p. 60.	Very hairy child.	Left, child's fist.	Mediastinal and mesenteric glands.	Sarcoma (?)

A CASE OF SARCOMA OF THE THIGH, FOR WHICH DISARTICULATION WAS PERFORMED THROUGH THE HIP-JOINT, WITH THE FORMATION OF A POSTERIOR FLAP.[1]

By John Chalmers Da Costa, M.D.,
of Philadelphia.

I make this report fully recognizing the fact that disarticulation at the hip-joint is no longer a novel or even a notable operation, but in this particular case there were obstacles to the prevention of hemorrhage by any of the usual plans, and also to the removal of the extremity by any of the accepted incisions. Because of these obstacles and the manner in which they were overcome it seems proper to make a report.

[1] Read before the College of Physicians of Philadelphia.

The patient, M. K., was a girl, aged fifteen years. The family history, so far as known, offered no fact bearing upon the cause of her disease. She had received no injury of any sort. Four months previous to her admission into the Hospital of the Jefferson Medical College she observed a hard, movable, and tender lump on the front of the upper portion of the right thigh. The lump was about the size of a hickory-nut, and seemed to be just beneath the skin. Iodine and other drugs were applied locally, but without avail. The tumor continued to enlarge rapidly, and in the course of a month attained the size of a hen's egg. From this time on the tumor grew with great rapidity, and upon admission into the hospital it had reached the dimensions shown in Fig. 1. Five weeks before her entrance into the hospital the skin over the tumor gave way in several places, and through these openings fungation occurred—a condition which was accompanied by an abundant flow of thin, reddish discharge. The patient's condi-

FIG. 1.

tion grew steadily worse, and when Dr. Keen and I saw her for the first time, on January 3, 1900, blood was oozing freely from the fungating masses.

CONDITION ON ADMISSION. The heart and lungs were found to be normal. The urine was acid, free from casts, albumin, and sugar; of a specific gravity of 1018, and contained 1.3 per cent. of urea. The girl was pallid and somewhat weak, and her family stated that she had lost some flesh, but not a great deal. The amount of hæmoglobin was 60 per cent.

On the upper and anterior portion of the thigh a somewhat conical mass about the size of a cocoanut was observed. The mass was firm, immovable, and extended laterally beyond the obvious outline as gauged by the eye. It also extended inward and seemed to have deep attachments. The limits of the tumor from above downward, estimated by palpation, were from the middle of the anterior portion of the thigh to two finger-breadths below Poupart's ligament; laterally it occupied

almost half of the circumference of the thigh. Just above Poupart's ligament an enlarged gland could be distinctly detected. The gland was hard, immovable, placed above the muscle, and unconnected with the skin. The skin at the summit of the main mass had been destroyed, and the tumor was fungating, and blood was oozing freely. The skin over a considerable portion of the tumor was of a deep, purple-blue color, and at a number of points it was thin and knobby where additional fungation was about to occur. This discoloration of the skin was apparently congestive. Above Poupart's ligament and for several inches below it the skin was free from growth and appeared normal. It was impossible to detect any enlargement of the iliac glands. The growth was obviously a small-celled sarcoma, which had started superficially and grown in all directions, and which was accompanied by enlargement of some of the superficial glands above Poupart's ligament. The nature of the glandular enlargement was uncertain.

From what structure the sarcoma had originated was problematical, but it seemed probable that the growth had begun in the subcutaneous tissues.

On January 5th, two days after admission to the hospital, the bleeding became distinctly worse. Blood was found to be dripping steadily, and we feared the onset of a furious hemorrhage. Dr. Keen and I discussed the following problems:

1. Shall any operation be performed?
2. If disarticulation is decided upon, how shall hemorrhage during its performance be prevented?
3. If disarticulation be decided upon, how shall the flaps be fashioned?

Question 1. The obvious tumor above Poupart's ligament, supposing the involvement to be malignant, made it certain that the complete removal would be difficult and probably impossible; but there was a small chance that it might be accomplished. Without operation there was no possible chance for life, and early death was inevitable; with operation there was a slender chance that the girl might be saved. The convincing argument in favor of operation was the ominous bleeding, which increased daily in amount and threatened to become uncontrollable. We, therefore, decided to operate.

Question 2. The method to be used to prevent hemorrhage during the operation was carefully considered. No form of elastic constriction about the thigh was admissible, because the incisions would have to be carried through and above the region compressed by the band; we rejected the pins of Wyeth, the clamp of F. Tilden Brown, and the method of the elder Senn. The lever of Davy was not considered, because we regarded it as uncertain and as apt to become displaced, and because we thought it likely that it would injure the intestine. It is well known that Davy's lever is especially liable to damage the gut if applied to the right side. The abdominal tourniquet was rejected, because we regarded it as uncertain and as apt to injure the intestine. It became evident that choice must be made between Macewen's method of compressing the aorta with the fist; Charlot's method of exposing the iliac artery by an extraperitoneal incision and compressing it, and McBurney's method of opening the abdomen, and through this incision compressing the common iliac artery and vein against the psoas muscle. The last-mentioned plan, which was devised and first practised by Dr.

Charles McBurney, of New York city, was selected. We regarded it as more certain than any form of aortic compression, more rapid than compression after an extraperitoneal incision, and also more feasible than the latter method, because of the situation of the growth. We decided that the McBurney method would offer a notable advantage—that is, it would permit of an examination of the intra-abdominal structures, and if these were found to be demonstrably involved, we might, if we wished, then and there abandon the operation.

Question 3. The method of making the flaps was easily decided upon. The only region of the limb where sound tissue could be obtained was the posterior portion, hence it was obvious that the flap must be a single posterior one. Furthermore, in order to permit of the removal of enlarged superficial glands it was evident that the anterior incision would have to be so placed as to give access to structures above Poupart's ligament.

The Operation. On January 6th, after the administration of ether, Dr. Hearn opened the abdomen and found that there was no obvious intra-abdominal involvement. The leg and thigh were drained of blood by holding the extremity in a perpendicular position, and Dr. Hearn, with bent fingers, hooked the artery and vein firmly against the psoas muscle. The extremity was then placed in the position requisite for the performance of the operation, after which, assisted by Drs. Keen and Magie, I proceeded to operate.

FIG. 2.

a, *b*, the anterior incision; *a*, *c*, *d*, the external incision and the beginning of the posterior cut.

The outer posterior and anterior incisions are shown in the diagram. (Fig. 2.) The anterior incision was begun below and external to the anterior superior iliac spine. The incision was carried to Poupart's ligament and along the line of the ligament until it was over the middle of that structure, when it was taken downward and inward to the inside of the thigh and to a point about three inches below the crotch. This incision divided the skin only. The upper margin of the skin flap was dissected upward, and the cellular tissue and glands above Poupart's ligament were dissected from above downward and were left attached to the portion which was to be removed, a little below Poupart's ligament. The femoral artery and vein were exposed below Poupart's ligament, then tied, and divided.

A long posterior flap was marked out by skin incisions, the muscles were divided, the flap was dissected up, and the disarticulation was carried out from in front and was extremely easy. All visible vessels were then ligated and the hæmostasis was absolutely satisfactory. The flap was trimmed to fit, was buttonholed in order to secure posterior drainage, and was sutured in place by silkworm-gut sutures inserted at the skin margins. Two supporting sutures were also used, and were

fastened upon perforated lead plates. The end of a piece of iodoform gauze was carried into the acetabulum, the other end emerging between the flaps; and a drainage-tube was passed to the depth of the wound, the free end projecting through the buttonhole in the posterior flap.

While the flaps were being sutured Dr. Hearn closed the wound in the belly wall. During the operation three pints of hot saline fluid were infused into the median basilic vein. The inner portion of the amputation wound was covered with a thin film of cotton, and several layers of collodion, to prevent contamination with excreta. The wound in the belly wall was dressed with gauze, held in place by collodion. The stump was dressed with gauze held in place by bandages.

There was very little shock, and the patient reacted quickly and completely. The recovery from the operation was uneventful; the highest temperature attained having been 99.5°. The inner three-quarters of the wound healed by first intention; the weight of the flap pulled the outer quarter of the wound open. Two weeks after the operation there was a granulating surface at the outer angle, where the wound had gaped, and a sinus in the lower flap, where the drainage-tube had emerged; and the patient felt in excellent condition.

Unfortunately, the calm in this case was of brief duration; six weeks after the operation a suspicious thickening was discovered in the abdominal wall opposite the middle of the scar. At this point the skin gave way and bleeding began, and on March 1st it was evident that recurrence was rapidly taking place. The family were informed of the girl's condition, and, no further operation being possible and the patient wishing to be at her home, she left the hospital. I have not since heard of her, although there can be no doubt that she soon succumbed.

There are a great many methods of performing amputation through the hip-joint. Joseph Bell, in his *Manual of Surgical Operations*, says that at least twenty-five methods have been put on record, and that, including modifications, there are thirty-seven or thirty-eight surgeons who have each had an individual plan of operating. He says that the reason of this great complexity is the fact that amputation has usually been performed for cases of severe injury; that no less grave procedure was possible, and that the flaps had to be made as the surgeon was able to get them. In the case above reported the making of a posterior flap was looked upon as an unfortunate necessity. There is a positive disadvantage in this operation—*i. e.*, the flap is extremely heavy and tends to tear the wound open. If I am ever obliged to perform it again I will put no muscle at all into the flap, and will use at least four button sutures to give support. It is true that in this operation the femoral vessels can be quickly exposed and easily ligated, and that disarticulation can be readily effected from in front; but the disadvantages clearly outweigh the advantages, and the operation is justifiable only when it is done as a matter of necessity. I cannot speak too highly of the perfection of the hæmostasis by McBurney's method.

Dr. Coplin reports that the growth is a small-celled sarcoma; that the muscles are infiltrated, and that the bone is free from disease. The

gland was, unfortunately, separated from the specimen and lost; and, therefore, I do not know whether it was or was not malignant. In a non-melanotic sarcoma of the thigh glandular involvement is not common, and yet we know that it may occur. It is quite certain that sarcomatous elements were lodged above Poupart's ligament; were not removed by operation, and grew with great rapidity after the operation had been performed.

STEREOAGNOSIS AND ALLIED CONDITIONS.[1]

By Charles W. Burr, M.D.,
NEUROLOGIST TO THE PHILADELPHIA HOSPITAL.

Recent writers have defined stereognosis as the faculty of recognizing the nature and uses of objects by contact by handling them. Astereognosis, or more properly stereoagnosis, is the inability so to recognize objects. Employed in this sense the terms are general, are used to denote a symptom, like the word palsy, and connote nothing as to the method by which objects are recognized nor the reasons for failure to do so. As the inability may be either central or peripheral, may depend upon failure of one or more of the primary sensations, or may be caused by disturbance in combining the sensations to form percepts, and as these are two very different things, they should be clearly separated. The ability to recognize objects is not a sense. It is not classifiable with the touch sense, the temperature sense, or any of the other senses. It is a method of perception. It is the grouping together of many different sensations, and from the sum of them drawing a conclusion as to what the object is. Sensation tells us an object has a certain size, form, weight, consistency, etc. Perception combining these decides it is a certain object and nothing else. Sensation furnishes the material on which perception works. The inability to perceive may be due to a failure of one or more of the forms of sensation, a lack of sensory data, or, as was said in my previous paper,[1] "the patient may have lost the tactile mental images, as we must call them till increased knowledge gives us a better name, stored up from past tactile experiences, and, therefore, having nothing with which to compare the sensations received, when, for example, he holds a knife; having no memory of what the sensations were when he held a knife before, he cannot perceive it." Thirdly, "the trouble may be in the act or process of grouping together the many and various sensations

[1] Read at the meeting of the Philadelphia Neurological Society, December 17, 1900.

[2] A Case of Tactile Amnesia and Mind Blindness. Journal of Mental and Nervous Disease, May, 1897.

received from an object." These are three very different conditions, and though they all cause the same clinical result, it is doubtful if it is wise to group them all under one name.

As Hoffmann pointed out, and as others have verified, many sensory factors are concerned in the recognition of objects by contact. The tactile sense, including pressure, the localizing sense, the space sense—that is, the faculty of distinguishing simultaneous impressions—the muscular sense, including the recognition of weight, position, and active or passive movement, the temperature sense, and the pain sense are all of greater or less value. There has been quite a little discussion as to which is the most important. It would almost seem that none is always essential or rather which are essential for the recognition of any given object depends upon the nature of the object. Thus, a man with loss of the temperature sense would not be able to recognize a piece of ice, though all his other sensations were normal. For that occasion the temperature sense would be very important. A man without conception of weight could not distinguish a piece of pasteboard from a sheet of lead; he could only say he was holding an object of a certain size, shape, roughness, or smoothness, but he could not have a correct perception of its nature. One would expect that the tactile sense would be the most important, but in hysteria it may be entirely absent and stereoagnosis be preserved, and in organic disease there may be insensibility to light contact, contact in which, so far as possible, pressure is avoided, without any stereoagnostic difficulty. According to Joseph Sailer,[1] " in case of peripheral disturbance—that is, some disturbance in or between the centre in the parietal lobe and the terminations of the sensory nerves in the skin—stereoagnosis is lost if tactile sense is lost; it is usually, but not always, disturbed if the muscular sense is lost, but may persist if any of the other forms of cutaneous sensation are lost or disturbed." Dercum puts much stress upon the space sense, or, as he prefers to call it, the spacing sense. Finally, there may be complete inability to recognize objects by handling them without any disturbance of sensation. As an example of the occurrence of stereoagnosis as an isolated symptom, I will refer to a case[2] which I reported under the name of psychic anæsthesia.

The patient was a young man who, when a boy, had a received a fracture of the right parietal bone which had caused a temporary left-sided hemiplegia and hemianæsthesia. On recovering he found he could not recognize objects by the left hand. On examination years after the injury it was found that, though there was no palsy and no anæsthesia save the inability to localize sensations, he could not recognize any object in the left hand. Being at the time ignorant of the

[1] Journal of Mental and Nervous Disease, March, 1899.
[2] University Medical Magazine, October, 1897.

work of Hoffmann and Wernicke, and misled by the presence of some hysterical symptoms, I made the error of regarding the case as one of pure hysteria. The real explanation was that, being unable to localize sensations, he could not distinguish form.

The next case was one of tumor of the brain. The patient, a gentleman, aged thirty-seven years, was seen in consultation in November, 1898. His trouble had begun a few weeks before with a little weakness and stiffness of the left side of the face, and slight thickness of speech. Later the left arm and leg began to grow weak. He suffered somewhat from pain in the right parietal region. A few days before I saw him he had an attack of some kind, during which he was unconscious for a few moments.

Examination. He was a fairly well-built man. There was a slight left-sided hemiplegia, including the lower face. Station was good. Gait was a little hemiplegic. The right knee-jerk was small, the left active. All movements could be made with the left arm, but all were weak. There was slight impairment of tactile sensation on the thumb and index finger of the left hand and over a small area on the left side of the nose. He knew the position of the arm and fingers with the eyes closed. He localized light touch badly, but pressure, even when gentle, well. There was no disturbance of the other forms of sensation. Speech was a little inarticulate, but not aphasic. The pupillary reactions, vision, the extraocular movements, and the eye-grounds were normal. In the left hand there was complete stereoagnosis. He died away from the city several months later. His physician wrote me that a tumor was found in the white matter above the lateral ventricle. In this man the sensory pathways from the periphery to the sensory cortex must have been open, for his anæsthesia was too slight to be of any significance. If we assume, as seems permissible, that the perception of objects handled takes place in a different area of the brain than that in which the sensations are received, we can explain the case by the tumor having cut off the fibres joining the two areas.

The next case is interesting because it was partial, did not include all objects. The patient, a man, aged twenty-five years, was knocked down, and fractured the right parietal bone in June, 1899. Since the accident he has had twelve attacks like the following. The fingers of the left hand and the wrist flex, and a series of waves of pain pass down the arm to the finger-tips. An attack lasts about two minutes, and is never accompanied by unconsciousness. He was trephined a few months ago. Some spicules of bone were removed, but the membranes were not opened.

Examination. There was slight palsy of the left arm, and he used it awkwardly; indeed, it was quite ataxic. There was some disturbance of the sense of position of the arm with the eyes closed. The other senses were normal. There was partial stereoagnosis in the left hand. Some objects he recognized, others he did not. I could not discover that the difficulty was confined to any one class of objects—objects having any one quality in common. It was not a matter of speech difficulty, for that was entirely normal.

The next case belongs to an entirely different class than the preceding. The patient was an inmate of the Philadelphia Hospital in Dr. Dercum's and my service alternately, and died while under the care of the former, to whom I am indebted for the privilege of reporting

the history. The patient, G. W. C., aged fifty-two years, a printer, was admitted to the Philadelphia Hospital, November 8, 1899, complaining of weakness on the right side. His family and personal histories were unimportant. He stated that one month before coming to the hospital he suddenly became weak upon the right side without loss of consciousness. For the two preceding years he had been nervous, and had been much troubled by a coarse tremor of the head and limbs. The detailed notes of this, his first admission, have been lost, but this much is certain, he had a right-sided hemiplegia without aphasia, with slightly increased reflexes and a little rigidity, and without any stereoagnostic trouble. He improved rapidly, and was discharged at his own request, November 17, 1899. He was readmitted January 17, 1900, to Dr. Dercum's wards, and in a few days, on the change of service, came under my care.

Examination. He was a man of middle-age, spare, sallow, and with a vagabond's eczema. He walked fairly well but dragged the right leg a little. The grip in the right hand was almost *nil*, but he could make all movements with the right arm, though all were weak. There was slight but distinct lower right facial palsy. The tongue was protruded straight. There was during rest a tremor of both arms, which at first I thought was emotional. All movements of the right arm were accompanied by marked ataxiform jerking in it, and an increase of the tremor in the other hand. There was no inco-ordination of movements in the left arm. Station was fairly good, except that standing, like any other muscular effort, increased the tremor. He knew accurately the position of either arm with the eyes shut. Speech was at this time tremulous, but showed no aphasia of any type save that he frequently used the words right and left indiscriminately. He understood all that was said to him. The knee-jerks were somewhat large, but not spastic. There was no ankle clonus, and the plantar-jerk was normal. There were no contractures in the arm or leg. In both eyes, and especially in the left, there was neuroretinitis. The pupils were large. The irides responded promptly to light, to accommodation, and to convergence. Extraocular movements were good in all directions. Vision in the right eye was 4/xv ; in the left 4/x. There was slight impairment of tactile sensibility on the right side—that is to say, a wisp of cotton gently touching the skin was not felt, but any pressure, even the slightest, was felt and properly localized. Brain tumor was diagnosed. By February 7th he had begun to have difficulty in distinguishing temperature on the right side. On the left side he recognized hot and cold and named them properly.

By March 14th there was marked lower right facial palsy. The right pupil was larger than the left. He could not stand alone, and the movements of the right arm were very weak, very tremulous, and very jerky. There was no muscular wasting. The biceps-jerk was increased on both sides. He could move the legs fairly well in bed, but they were too weak to sustain the weight of the body.

By March 18th he had improved in motor strength so much that he was able to walk and could use the right arm fairly well, but he was entirely unable to recognize any object held in the right hand. This was not a speech defect. The difficulty was not in recalling names or uttering them. He had no knowledge of the thing he held, or its nature or uses. He recognized and properly named all objects held in the left

hand. He understood all that was said to him. (Later this was not the case.) He recognized and named a watch on hearing it tick. By vision he recognized and named some objects; others he recognized and described the uses of, but could not name; and still others he neither recognized nor named. He recognized and named all letters printed in capitals except O, Y, T, C, S, V, and D, and read aloud the following words: dog, log, cow, table, bank, rain, dull, ring, gray, blue, rat, watch. Left and right, which were the first words he had misused in speaking, he also confused in reading. Many printed or written words he could neither recognize nor read aloud. Sentences he could not read, or, rather, some short and simple ones he could read word by word, but when he had reached the end could not recall the beginning. Many words that he could recognize in capitals he could not recognize in script or small letters. He could read many words containing one or even more letters which if shown to him singly he could not recognize at all. The stereoagnosis was persistent from the time of its onset until death, but his mind-blindness varied from day to day, though there was a constant downward tendency. At the beginning there was no word-deafness. Later it became necessary to repeat what was said once or twice, and in the last few weeks of life he was so dull mentally that no study of speech could be made. His capacity for spontaneous speech varied greatly. At first, on his admission to the hospital, barring tremulousness, there was no trouble. Later he at times misused words so much that he could not be understood, and at other times he was able to carry on a conversation well. For a short time before death his speech was a mumbling jargon. The severity of the palsy varied greatly from time to time. Several times he became bed-ridden and was expected to die, but he rallied and became well enough to be out of bed. During the last few months the palsy and aphasia always increased after he had been out of bed a few hours. Throughout the course of his disease he complained of dull, diffuse headache. He never had any convulsions, and the hemiplegia never became spastic. He died August 27, 1900. The clinical diagnosis was brain tumor in or near the left angular gyrus. Necropsy verified the diagnosis. The tumor was found in the parietal lobe. It pressed against but did not invade the ascending parietal convolution, partially destroyed the angular gyrus, and involved almost the entire posterior parietal lobule. The white matter below was largely invaded. It probably arose in the white matter, and grew toward the cortex.

There are many interesting points in this case that cannot be discussed now. The patient was under observation throughout almost the entire course of his illness. Starting out with an uncomplicated hemiplegia, symptom was added to symptom as we watched him, and as the symptomatology became more complex its mechanism grew clearer and easier to understand. The course of events was slight hemiplegia, slight tactile anæsthesia, stereoagnosis, mind-blindness, loss of the temperature sense on one side, sensory aphasia varying in intensity, mental dulness, and death. I do not believe that the tactile anæsthesia stood in any causal relation to his inability to recognize objects. It was too

slight. Contact, much lighter than that which occurs on handling an object, was felt when his stereoagnosis was absolute. The other sensations, barring that of temperature, which was lost after the stereoagnosis had appeared, were felt normally.

The next case is very curious, because stereoagnosis was preserved when, according to all the rules, it ought to have been completely abolished. I reported it verbally to the section on internal medicine of the College of Physicians some time ago, and Dercum refers to it in his study of stereoagnosis.[1]

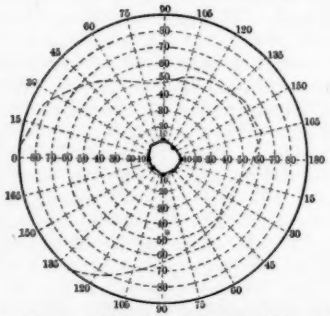
The patient, a woman, aged thirty years, was admitted to my wards at the Philadelphia Hospital, June 14, 1896. Two years before admission she awoke one morning and found herself paralyzed and without feeling on the left side. Speech was a little thick. In a week she was able to go about and continued to improve until December, 1895, when she became palsied in the left side of the face. The mouth was drawn to the right, and she could not close the left eye. Soon after the first palsy she suddenly became deaf in the left ear. Vision of the right eye was lost from injury.

Examination. She was very corpulent. All movements of the left arm were slow and weak. Her gait was slow, but not truly paretic, though the movements of the left leg seemed slower and weaker than those of the right. Station was good. Contractures were absent. There was no muscular wasting. The elbow-jerk could not be obtained. The knee-jerks were large, greatest on the right side, but not spastic. Ankle clonus was absent. She did not feel touch anywhere upon the left side, including the face. Deep pressure was felt everywhere, and the temperature sense was normal. There was some palsy of the entire left side of the face. The forehead was smooth, and she could not wrinkle the frontal muscle. The left eye could not be closed, and the mouth was drawn to the side. She was completely deaf in the left ear. Dr. de Schweinitz examined her eyes on June 16, 1896, and reported: "Right eye, pupil fixed. Entire atrophy of disc, which is greenish in color. On left side well-marked atrophy, which is also greenish. Arteries rather small. Veins not contracted. In neither eye is there any perivasculitis. Right eye blind. Left eye vision is 15/LXX. The field of the left eye is irregularly contracted, the lower and temporal field being nearly gone—hemianopia (?). Light response of left pupil normal. Right absent." Speech was normal and thought slow.

She was not re-examined till February 10, 1899. The motor symptoms, the reflexes, and the mental state were the same as before. The tactile, temperature, and spacing senses and the weight sense were all absent. The deepest pressure was not felt either as contact or pain. For eight or ten times she could put the right (normal) hand or arm, the eyes being blindfolded, in any position in which the left (anæsthetic) hand had been passively placed. After eight or ten times she would tire, and fail miserably. She could never put the left (anæsthetic) hand or arm in the position in which the right had been passively placed. This was not on account of palsy, because, as was said above, though the movements of the left arm were weak, all could be per-

[1] Journal of Mental and Nervous Disease, November, 1900.

formed. It is remarkable that though she knew the position of the left hand, as is shown by the fact that she could similarly place the right, yet she could not, knowing the position of the right hand, as she must have known, for she described it well, put the left in a similar position. She could not with the eyes closed bring the left hand directly to the right. Her only way of finding the right hand with the left was to carry the latter across the body to the shoulder and down the arm to the fingers. With the eyes open she was able to use the left hand to carry plates and trays about the ward. With such marked and total anæsthesia as she presented it was expected she would be stereoagnostic. She was not. She recognized and correctly named objects of all shapes and weights put in the anæsthetic hand. When Dr. Dercum examined her some months later her condition was the same, except that sometimes she made errors due to an inability to estimate relative weight. For example, she described accurately the shape of a piece of cardboard, but called it a piece of iron. At the present time (December 3, 1900) her condition has changed in so far that stereoagnosis is becoming quite marked. She now recognizes a few objects, but with most fails entirely. The plantar-jerk is normal on both sides. She has with the eyes shut no knowledge of the position of the left leg.



Field of vision for white; disc one centimetre in diameter, distance thirty-five centimetres.

Dr. Charles A. Oliver kindly examined the eyes several times, and reports as follows:

"Examination shows no evidence of grave external inflammatory alteration in either eye. Pupil of right eye the larger. The iris of the same eye insensible to individual exposure to light stimulus. Consensual reaction of pupil quite marked to light stimulus, accommodative effort, and convergence impulse. Iris of the left eye freely mobile to light, accommodation, and convergence. Extraocular movements greatly lessened, particularly those of the left eyeball. The greatest excursions obtained when the eyes are made to look downward. Upper lid of left eye slightly drooped. Optic nerve-head of right eye atrophic from previous inflammation. Optic nerve-head of left eye markedly degenerate from previous inflammation. Vision of right eye lost. Eye blind. Vision of left eye reduced to one-eighth of normal in visual field, which is greatly contracted. (See Figure.) *Conclusion.* It is most probable that these ocular findings are the results of two forms

of organic lesion—a left-sided peripheral and a central one. Whether any of the symptoms are a part of the functional changes elsewhere seen in the patient it is impossible to assert from the ophthalmic signs alone."

The diagnosis in this case is difficult. All the doctors who have seen her have said informally and in off-hand fashion that her sensory symptoms are hysterical. I have, however, so often fallen into the diagnostic pitfall of calling a thing hysterical because it was strange, that I prefer to say I do not know. The facial palsy is manifestly due to disease of the seventh nerve—is a peripheral palsy—a thing added on to her other troubles and independent of them. If her history is accepted as correct, the hemiplegia did not come in the manner usual in hysteria. It is not common for a hysteric patient to go to bed well and wake up paralyzed and with thick speech. That there may be no contractures or great excess of reflex action in organic hemiplegias is well known. The patient has no heart disease, and was below the usual age of cerebral hemorrhage at the time of onset. She is probably a syphilitic, though no clear history could be obtained. During the four years she has been in the hospital she has had no hysterical convulsions, nor, indeed, any hysterical symptoms unless the preservation of stereoagnosis with anæsthesia be such. That stereoagnosis may be preserved in hysteria with loss of the touch and pressure sense is well known, but in all the cases I have seen the muscle sense has been preserved. I know of no other case, organic or hysteric, presenting the same picture as this woman.

There is still another class of cases in some respects unlike any of those reported here. In them there is, with preservation of sensibility for all forms of sensation, an inability to recognize objects in either hand. The only two cases I have seen were accompanied by mind blindness. The condition is probably always due to disease of the tactile perceptive area on both sides, or if the disease is limited to one side it is of such a nature as to influence the other by pressure. One of my cases, the one referred to in my first paper as having been seen in the practice of Weir Mitchell, came to necropsy some time later while under the care of Dr. J. D. Eskridge, of Denver. He wrote me that he found " diffuse sclerosis of the brain involving principally the occipital and parietal lobes." Before death she had become totally blind in the ordinary sense, and demented. The lesions were too wide-spread to be of any localizing value.

Conclusions. 1. The ability to recognize objects by handling them depends upon the integrity of the afferent nerves, the cortical sensory area, and the cortical perceptive area.

2. Disease of either of these will make it impossible for the patient to recognize objects by handling them.

3. We may dismiss from consideration here the inability to recognize objects because of disease of the sensory nerves or of the sensory tracts in the spinal cord, medulla, and pons. Such inability is due to anæsthesia of one or more types.

4. There is a distinct area of the cortex in which sensations produced by handling objects are grouped together to form tactile memory images. This, the tactile perceptive area, is in the parietal lobe. It is not the same thing as the sensory area, though it may be located within the boundaries of the latter.

5. It would probably be well to limit the term stereoagnosis to cases in which the inability to recognize objects by contact is due to some failure of sensation caused by brain disease either in the cortical sensory area itself or in the fibres going to it.

6. Tactile amnesia includes the cases in which, on account of disease in the tactile perceptive area, the tactile memory images are destroyed. It is not infrequently associated with mind-blindness, and, indeed, it is probable that always in recognizing objects by handling them we recall from memory a more or less faint recollection of the visual appearance of the object. Auditory memories are less frequently recalled, because less frequently needed to make a complete percept, and those of smell and taste quite rarely.

7. Which form of sensation is most necessary for the recognition of any given object depends upon the qualities of the object. Tactile anæsthesia, if sensibility to stronger pressure is preserved, causes little or no difficulty. The space sense, the localizing sense, and the sense of position are probably the most important, for by them we learn the form of objects—the most important element in recognition.

8. When in the cerebral palsies of children there is inability to recognize objects in the paralyzed hand, it is often caused, as Oppenheim states, by the fact that tactile memory images were never acquired.

9. Granting that the tactile perceptive area is not the same as the cortical sensory area, such cases as the second reported here can be explained on the hypothesis of a lesion cutting off the fibres joining the two areas.

CLINICAL STUDY OF ACUTE MYOCARDITIS.

By Beverley Robinson, M.D.,
of new york.

One of the most interesting and also difficult subjects connected with cardiac pathology is that of inflammation of the muscular walls. Formerly, as we know, the existence of this affection was denied, or, if admitted by some authors, had relatively small importance as compared

with inflammation of the endocardium or pericardium. At a later date in the history of cardiac disorders myocarditis commenced to assume some importance. It is only, however, within a brief period that the different affections of the muscular structure of the heart have received their true value and consideration. I am glad to state at present that the medical mind has had an awakening, and to those who are careful observers and clinicians the mere presence of a murmur or a pericardial friction-sound is no longer of great moment unless it carries with it the probability that sooner or later real functional disability will occur owing to its effects upon the adjacent muscular walls. Of course, the effects of muscular changes must depend largely upon many conditions. The causation is different; the circumstances in which they occur are manifold, and may be acute or chronic, limited or diffuse.

In acute diseases, especially those affecting the whole organism, and mainly those of febrile type, we have to do with the most interesting and most important cases, because our time is limited to act properly and efficiently, and the threatening is often imminent, although the indications may be obscure and our useful interference be questionable. Mere doing is by no means so imperative as well doing. Life often hangs in the balance, and immediately so.

In the eruptive fevers—in diphtheria, typhoid fever, pneumonia, rheumatism, in many septic conditions, in toxic states, and, above all, acute alcoholism at times—how often do we stand at the bedside and ask, Is this a case where the muscular fibre of the heart is already touched by the poison of the disease to the degree where acute degeneration is already present? Unquestionably there are times when the closest observation and attention on our part will still leave us in great and anxious doubt. Other instances present themselves in which we feel that we are reasonably sure in our judgment and are quite confident that no other diagnosis is sufficient or permissible to explain symptoms and signs satisfactorily unless it be inflamed or degenerated cardiac muscle.

In many instances of typhoid fever and diphtheria of marked virulence and intensity in which the general symptoms have been alarming almost from the inception of the disease, in a very brief period, or about the fourth, fifth, or sixth days, we occasionally remark a feeble and very rapid heart action. The first sound may be low, distant, muffled; the second sound may be somewhat accentuated and particularly over the pulmonary area, or, again, this sound, although still distinct, lacks force and normal intensity. With such a heart we have a rapid, feeble pulse, small in volume, and easily depressible; it may be unequal, somewhat irregular; a beat may now and then be lost or inappreciable to our tactile sensations. Instead of a rapid heart we may have a slow one; but this is rare, almost exceptional in these acute cases. A soft,

blowing murmur at the apex and systolic in time is often developed. It may be limited as to its area or it may be widely heard over the præcordia. While this is true, it is still heard most intensely near the apex-beat or in the pulmonary area. In the latter case a pulsation of the second and third left intercostal spaces may accompany it; and this pulsation is of itself, as Russell has noted, an evidence of some degree of heart failure. Restlessness, profuse perspiration, especially of the face and upper limbs, accompany this condition. The patient is apathetic, listless, soporose, or frequently there is a low, muttering delirium from which he can be separated for a moment only by acquiring his attention with forcible and loud questioning. With such a cardiac state we may or may not have more or less implication of the bronchial tubes or lung structure; and dulness at the bases with fine crepitation during inspiration and over an area of at least a hand's breadth is no uncommon finding. The urine is apt to be somewhat deficient as to quantity and to contain abundant urates, an occasional cast, hyaline or granular, and a notable amount of albumin.

Cases like the foregoing, in diphtheria especially, are apt to terminate fatally and often suddenly. This is also true of croupous pneumonia. In typhoid fever they may go along about in the same way for several days and then perhaps measurably improve. Such cases even in typhoid fever are prone to be long and severe ones, and it is frequently difficult to say positively what the ultimate outcome will be, even though no other dangerous complication may subsequently arise.

What is the pathology of such a condition? In the few rare instances where I believe I have seen it at the autopsy, very little at times that is positively indicative of muscular changes. It is true the heart is soft and flabby; it tears more easily than it should; it is darker in color, probably from blood staining; heart clots are few, badly formed, and usually cruoric in typhoid fever.

In pneumonia and diphtheria, on the contrary, they are often in large part fibrinous, sometimes gelatinous looking, sometimes with the fluid well pressed out of them, and almost appear to have several layers of superimposed fibrin. Extensions of the clot are not uncommon in the pulmonary artery, and they often fill moderately the right ventricular cavity and auricle. The heart may be somewhat enlarged, but where this is the case I have attributed it to previous disease. In a similar way where there has been any very manifest valvular trouble I could not believe that the acute trouble had anything to do with it.

I shall make an exception for a certain degree of vascularization of the mitral valve which I have seen more than once. In diphtheria notably there is often a decided beading, with redness, swelling, and increased vascularity of its free margin. The other valves are usually normal, at least to the naked eye. Under the microscope the cardiac

fibres present little or nothing abnormal; here and there, perhaps, there may be a slight granular condition, and the striæ may not be so distinct as normal.

In those instances in which I have seen autopsies later on in the course of acute disease of febrile type—and I am now speaking particularly of typhoid fever, pneumonia, and diphtheria—I have occasionally seen areas of the heart muscle either in the papillary muscles or in the walls of the ventricles which seemed paler to the naked eye than the rest of the heart. In these areas without doubt there was a deposit of fat—microscopical sections have later revealed decided fatty degeneration at least in limited areas; and when that is the case not only the nuclei of the muscle may be much changed in form and structure, but the heart fibres otherwise show the degeneration. The striation of some fibres may have almost completely disappeared, the granulations may be very numerous, interspersed with many fat globules, and the interstitial cellular tissue between the primitive muscular bundles may be notably increased, besides containing many red or white blood-cells.

I confess there is no direction in which this inflammatory and perhaps degenerative development interests me more than in croupous pneumonia. The reason is not far to seek. In no other acute disease does life terminate more frequently, suddenly, and at times unexpectedly from so-called "heart failure" than it does here. Now what is this due to unless it be through the myocardial inflammation or degeneration which has become developed under the poison of the disease? And this is proved particularly when we encounter those instances of very limited or partial lung involvement, and yet they march steadily from bad to worse despite our every effort made to save them.

Up to the present time we have no drug or system of medication that is in any way satisfactory to meet these cases. The nearest approach to it, in my judgment, is to respond to the indications in the following manner: on the one hand, to help restore lowered nerve tone and strengthen muscular activity with frequently repeated and even large doses of strychnine; and, on the other, to destroy or neutralize the pernicious effects of bacterial invasion of lung tissue, and thence the blood and whole organism, with inhalations mainly antiseptic in character, of which I still believe beechwood creosote is the best, though very imperfect, of which we have knowledge. I have not been able to appreciate that the use of heart tonics like digitalis and strophanthus, in anything except small, repeated doses, and then only in a very temporary manner, has proved to be really useful. Nor, indeed, with the recognized pathology of the bad cases of pneumonia, diphtheria, or typhoid fever do I see how they could be.

It always seems to me as though the great risk of producing such forcible contraction of the relatively healthy fibres as to effect cardiac

dilatation through distention of those which are more or less degenerated neutralized all useful action. This is no mere baseless theory. It is a conviction forced upon me by close, attentive clinical observation and inquiry.

I believe that the poisonous effects of these diseases, certainly so far as the heart is concerned, in many instances, are more or less self-limited. This being admitted, our effort should be to avoid, above all, doing more or less irretrievable harm, and that, too, in a very rapid manner. In many of these cases I am confident we do much less harm when we guard our use of digitalis and strophanthus with nitroglycerin or the nitrites. Thus we break up peripheral resistance as much as may be, and so we lessen the necessity of the heart doing more work than it can possibly perform. The diffusible stimulants are the medicines which are most clearly indicated and many times urgently required. Alcohol, ammonia, ether, chloroform, camphor—all these are good and at least rarely give us cause for regret.

There is one drug which I feel at present is far less used in these acute cases than it should be, and that is iodide of potassium. Its effect in stimulating the nerve centres, especially when the febrile stage has lasted more than a few days, is perhaps known to a few, but is not yet sufficiently insisted upon. Later, of course, and wherever other means have failed us, and particularly wherever we dread the formation of interstitial growth between cardiac fibres, already many good observers acknowledge its value and rely upon its use more than any other drug.

With respect to oxygen, opinions are various. Some there are who, despite frequent use of oxygen, affirm that it has little or no value. Others there are who believe, and I am now more and more firmly fixed in this opinion, that provided we give oxygen in its pure form, modified only by a small proportion of nitrous monoxide, freely and more or less continuously during the stress of the acute disease, we shall be able frequently to ward off or prevent the calamitous effects of the bacterial poison in effecting cardiac degeneration and notably that which is fatty.

In addition to the foregoing I feel called upon to refer to the use of cold in pneumonia only to speak of it in measured terms of praise. While I have little doubt that in some instances a moderately cold compress, properly applied around the chest, may be serviceable in relieving pain, oppression, and lowering temperature, I do not believe that we usually obtain the stimulating effects upon the cutaneous circulation and toning up of the central nervous system which has been ardently claimed for it. I am rather of the opinion that similar good effects may be obtained from moderate warmth.

No doubt the old-fashioned poultice of meal or flaxseed was dirty, cumbersome, and unnecessarily troublesome to the patient and nurse; no doubt, also, by its frequent change it fatigued the patient often very

much, and yet it did soothe and relieve. We shall obtain these good effects from lukewarm water covered with impermeable material, which retains heat and moisture and without being a source of anything like the same degree of annoyance.

I know these are heterodox views to many; I know that the stimulating effects of cold on the cutaneous circulation and central nervous system are most ably advocated by a few, and in this connection I should be derelict not to mention the name of Dr. Simon Baruch, who has done so much to explain and to fortify those who hold to the great advantages of cold externally and internally employed.

I must confess it always seems to me when a patient's nervous system is already suffering intensely from profound systemic poisoning and when degenerative processes are, without doubt, in a sure way of being developed, that what we need especially is to soothe rather than to stimulate, unless with our stimulation we afford the food that is most readily disposed of as fuel; and such, I take it, is essentially the rôle of alcohol and the ethers in severe acute febrile disease.

Why is it when all other means fail do we almost invariably have recourse to the soothing and stimulating effects of morphine hypodermatically, or, better still, sometimes small doses of extract of opium internally? Here, again, I believe our useful interference must of necessity be a very measured one. Pass by the narrow limit, and we do irretrievable harm; but no one can deny when a heart is weakened to its utmost, when urinary secretion is very small and concentrated, that many, many times such patients are marvellously relieved in every way by the use of these drugs. I have repeatedly seen the heart beats lessened in frequency and gain in strength and regularity. I have also seen the urinary secretion become more abundant and resume all its normal characters.

The question of the application of cold, of course, is often a relative one; but what I claim is that the application of a compress soaked and wrung from water at 90° to 95° F. does just as much and more good than the compress applied from water at 65° or 70° F. Very soon the compress will reach the former or even a higher temperature when the body is at 103° to 104° F. or still higher, and surely the discomfort and risks resulting from brief, temporary shocks to the nervous system which frequently repeated cold compresses mean are not to be lightly considered.

As to the cold bath in pneumonia, even the most enthusiastic of the advocates of its use has abandoned it whenever an adult pneumonia is treated (see *Medical Record*, August 4, 1900, article by Simon Baruch), and finally reserves it solely for certain cases of pneumonia in children. I am fully prepared to admit in this question of the utility of cold applications in pneumonia that here as everywhere in the practice of

medicine allowance must always be made for personal idiosyncrasy and epidemic influence. There are a few patients who do bear cold applications apparently well, without much harm resulting, and occasionally with seeming good effects.

There are also seasons in which pneumonias—despite seeming virulence, it may be, at the start or in the initial stage—do not later show at all the same virulence as we have seen at other times and under seemingly like conditions. Why this is will not be satisfactorily understood until susceptibility to disease and the intimate laws which govern it are far better understood than they are by us to-day.

It must be always borne in mind in the care of these cases how essential it is to prevent as far as possible all exertion on the part of the patient. The nurse should see to it that whenever a change of position is desirable she should aid him as far as she can; even the raising of the head in the voluntary act of drinking should be assisted. An alarming or fatal attack of syncope may possibly occur unless attention be thus rigidly exercised. Frequently repeated and easily assimilable nutrition should be kept up with beef peptonoids, milk, koumyss, broths, egg-nog, etc.

In more than one instance I have felt assured that I have helped my patient's condition markedly by giving an ounce or more of black coffee by the mouth several times in twenty-four hours, or a stimulating enema of coffee per rectum in much larger quantity if there was evident great prostration, sudden collapse, or pronounced stomachal intolerance.

Later on in the course of acute febrile diseases sudden death from heart failure due to myocarditis is not very infrequent. I have known it to occur in diphtheria when the outlook had appeared relatively favorable and when the convalescent stage was almost reached. I have also had at least one sad experience of it with a child recovering apparently from typhoid fever. In many instances I have had little or no doubt that owing to acute degeneration of cardiac muscular fibres death occurred which might otherwise have been averted.

In these cases there have been areas of the papillary muscles or of the left or right ventricular walls where the yellow coloration, soft, friable tissue and perhaps greasy feel gave to the naked eye positive indications of what the microscope would surely reveal, viz., more or less complete disappearance and fatty degeneration of muscular fibres.

It is reported by several reliable observers that they have found also hyperplasia of connective tissue between the fibres, with numerous leucocytes, red cells, and proliferative cells. Pigment granules, regularly or irregularly disseminated within and between muscular fibres, have been frequently observed. This change, especially as regards quantity, is more apt to occur the older the patient is. The cells, both of muscle fibre and cellular tissue, are much changed in form and structure or

may have disappeared altogether. It is also true that horizontal striation of muscle and the long fibrillation often no longer exist in parts. The muscular fibre may be almost hyaline in appearance and relatively broad. It may be also atrophied and diminished in size owing to the pressure and contraction exerted by connective tissue increase. The latter change, however, is one much more frequently met with in chronic myocarditis, where almost all changes, according to some writers, partake of this character and make a real fibroid degeneration of the cardiac muscle.

We should not expect to find fatty changes always widely disseminated or deeply seated. Frequently these changes are merely in patches, and elsewhere the cardiac fibre is apparently and relatively healthy so far as the microscope reports. Even in the midst of a local degeneration of tissue certain fibres are much more affected than others, and alongside of one fibre which is almost wholly granular or fatty another will be found nearly intact.

In those cases where there is accompanying endocarditis or pericarditis the degeneration is apt to be much more diffuse than where no inflammatory condition of these membranes exists. The papillary muscles and the ventricles, especially the left near the apex, are the parts usually most degenerated. The auricles are very rarely at all notably involved.

In many of these cases, although the symptoms and signs during life pointed with great certainty toward probable degeneration of muscular cardiac fibre, we are surprised at the autopsy to find little or no evidence of it. Beside, the valves and orifices are usually intact; at least there is no evidence of acute inflammation or old sclerotic changes. The heart, however, is soft, flabby, has lost its shape, flattens out when resting on the table; the walls are sometimes somewhat thinner than normal and the cavities slightly increased in size. In such cases when the right or left ventricle is opened at the apex and the hydrostatic test made the valve is not competent.

Two facts are thus explained to my mind which have been recognized during life: first, functional disability; second, a soft, blowing murmur heard at the apex during systole. All we can positively say of such hearts is that they are really weakened by disease—that they have lost their contractile power. Such hearts may have been primarily weak organs, and just as they might not have been able to react properly to any undue or excessive strain during health without showing the bad effects of it, so during an attack of acute febrile disease they give way rapidly both in function and structure.

Of course, to the pure anatomist or pathologist, who regards only organic lesion as shown by eye and microscopical lens, to speak of functional adynamia as something all important smacks too closely of mere vague theory without proper and sufficient basis for intelligent argu-

ment; but to others, and among these I find myself, there is just as much cogency in the reasoning which admits a latent force or energy—a vitality, in other words, which exists to a greater or less degree in certain tissues of individuals and which is very defective in others—as to attribute all symptoms and signs to appreciable local changes.

In any event, and for the while, we must count with such reasoning and such facts; and it is not the evidence of highest wisdom, to my mind, to ignore them. We are prone to explain these facts occasionally when our every effort at accurate research, both as regards the tissues and fluids of the economy, remains negative, by speaking of being run down, under par, of poor nutrition, and using such catch terms as though these words or expressions advanced our knowledge very materially or were satisfactory in any final discussion.

In the *malade imaginaire of Molière* there is a conference of the learned doctors as to how and why opium causes sleep. The final conclusion reached was "*opium a le pouvoir dormitif*," and that is all there is to it.

All saving agents, so to speak, whether regarded as food or medicines, seem to me rationally what we should most keenly look for when called upon to treat these cases. This is why agents such as tea, coffee, cocoa, kola, etc., are so valuable when the body is submitted to a great strain and where little or no other food or drink can be had. Take the soldiers of our army, the sailors of our navy, in time of war, on forced marches or imprisoned in fortresses; take men on the plains, or explorers in the Arctic regions, or mountaineers who make high and laborious ascensions—in any and all of these situations the universal report is that in time of greatest need nothing will or can replace them. Not only do they seemingly give almost as much if not more, at times, of temporary energy and strength than alcohols or ethers, but their power is far more enduring and beneficial when exposure or hardship has to be for a long time resisted.

Physiologically they lessen the rapidity and degree of combustion in the economy, the tissues are thus saved from any destructive action of phagocytic cells, and living force and energy are thus spared to their utmost.

I have attempted in giving black coffee frequently to my cases of acute febrile disease, with evidences of heart weakness or cardiac degeneration, to meet the most evident indications up to the present time. I have supplemented or varied the use of coffee at times both with cocoa and kola. The former of these, particularly in the form of extract, given by mouth or hypodermatically, has often helped me when I had almost given up hope. I am inclined to believe that if my faith and trust were greater, and I were to use these agents sooner and more freely, I would get far better results in cases of acute myocardial degenera-

tion. One reason I believe that these agents do not always respond to our hopes is because the preparation employed is relatively inert. Many cocoa leaves, as many digitalis leaves, are dry and inert and of poor quality when first gathered. I cannot place too much insistence upon this. I have experimented with many preparations of cocoa as sold by different druggists, and many are relatively inactive and worthless. Too much care and inquiry cannot be taken in order to obtain a thoroughly reliable drug. And it is only too true that the power the best of us have over the march, duration, and ultimate outcome of acute disease is limited, and that this small power is reduced to a minimum when we employ drugs which have little or no physiological action when employed in the doses and forms which are wide-spread.

Hence, in part, the great skepticism so visible everywhere among our best clinicians and practitioners of widest experience when they speak of the curative action of drugs. There are, I freely admit, few truly valuable ones among the vast mass of those that are advertised and sold, and for this reason, also, it behooves us jealously to guard and protect those that are from the meddling of ignorant, fraudulent persons.

In many cases of acute myocarditis the question arises as to whether we have to do with concomitant endocarditis or pericarditis. In some cases, indeed, it is undetermined for a time at least as to whether the symptoms and signs present are not entirely due to the inflammation of the endocardium or pericardium and the myocardium is little or not at all involved in inflammatory or degenerative changes.

Endocarditis is not easily diagnosed at times; it may be very obscure. The local symptoms are often almost or entirely absent, with the exception of the systolic murmur present over a limited or somewhat wide area of the præcordia. There may be no localized pain or marked discomfort; no increased pulse or force in cardiac beats; no irregularity or intermittency of cardiac contractions; no abnormal pulsation in intercostal spaces; no vascular distention in vessels of the neck. The local expression of endocardial inflammation in slight degree simply reduces itself to the murmur. It is true this murmur may be rougher, more intense, more metallic than the one proceeding from mere dilatation of orifice without local change or from lack of close coaptation of the velæ due to lack of power in the heart muscle; but, as we know, the nature and intensity of a bruit is not of itself absolutely characteristic of inflammatory or other changes. Again, and this is more frequently true, the murmur itself is absolutely similar to one that we may fairly attribute to myocarditis alone. The pulse, of course, in endocarditis may rapidly gain appreciably in force and frequency, but this is usually true only when the inflammation of the endocardium is considerable. There may be a sudden or rapid rise of temperature; but here, again, this means marked inflammatory changes of the endocar-

dium, and if accompanied by rigors or repeated chilly sensations there will arise a reasonable suspicion as to whether there is not some septic process present, such, indeed, as would lead to the ulcerative form of endocarditis. If this be true usually the murmur has shown itself rapidly and with much intensity, and its loudness very soon increases, beside being accompanied with general phenomena quite different from those of myocarditis, with tendency to cardiac weakness or failure.

I admit that much of the differential diagnosis is based upon probabilities rather than upon certainties; but this statement is no truer and need be no more emphatic than in numerous other difficult positions in the practice of medicine. Of course, the presence of a special form of disease must always be considered. Other conditions being the same, I should look for endocarditis as being far more probable in acute rheumatism than the other diseases already mentioned, simply because we know that acute rheumatism has a particular predilection to attack the endocardium. Even in rheumatic fever, however, I am now convinced that we have rather exaggerated this tendency at times, and that many instances of what is commonly affirmed to be endocarditis have been without doubt mainly a myocardial inflammation or degeneration.

While I have not always been able to make the differential diagnosis in the initial stage of the manifest cardiac determination, the march of the disease and the nature and perhaps rapid or sure, though slower, disappearance of the cardiac abnormal bruit have thoroughly convinced me of the physical cause producing it.

If there be a pericardial inflammation the superficial character and the nature of the friction-sounds may be sufficient to differentiate these cases. Moreover, very soon the increased and special form of cardiac dulness, the particular displacement of the apex-beat, the distant and more muffled and duller apex-beats, with very possibly the almost entire absence of these beats to inspection, and it may be palpation, help the accuracy of our differential diagnosis very much.

I have not had occasion to see hearts at the autopsy table in cases of influenza except where this disease had been complicated with pneumonia, and then the hearts resemble somewhat those already described. One marked difference, however, is in the contents of the cavities. Instead of the right ventricle and auricle and large vessels containing fibrinous coagula, these were much softer, contained far less fibrin, and were darker and far more cruoric, viz., contained a far larger number of red blood-globules. I am quite confident, however, that the heart of very many influenza patients is much affected. I have no doubt that the nervous structures, ganglia, vagi, and sympathetic have lost their tone and gone through certain changes. They may be recognizable under the microscope on account of the cardiac and other symptoms present during life.

Beside the nervous involvement there is also abundant evidence in influenza that the muscle is attacked, and it is highly probable that the great depression, continued weakness, syncopal attacks, slow recovery, frequent returns of some of these symptoms subsequently and somewhat periodically at times, are all due in part to myocardial changes. In no disease with which I have a clincal experience is it more important to guard patients against overexertion than influenza during its acute and subsequent stages.

Patients who have been attacked severely with this disease may show after a few weeks or months some cardiac enlargement due to dilatation and evidently occasioned directly by the influenza attack. Not only, therefore, during the period of the acute stage of this disease should we be specially careful in not permitting any physical exertion—not even the mere sitting posture in bed without assistance and support—but we should for many weeks subsequent to an attack at all severe urge upon patient and friends the absolute necessity of great prudence and the strict avoidance of all intemperate or continuous bodily or mental effort. Many hours of the twenty-four had better be passed in repose or sleep and complete quiet mentally, and the recumbent posture should be sought whenever the heart shows any signs of exhaustion. Going upstairs, walking too rapidly, lifting heavy burdens, indulgence at the table, use of tea, coffee, or tobacco, should all be strictly limited for many weeks or months. Of course, there is the personal equation here, as everywhere in medicine, and there are many patients who recuperate rapidly even from an attack of influenza, and who on that account need not, perhaps, exercise quite the same severe precautionary measures as others. It is also true that the poison may be far less virulent in certain instances than in others, and, therefore, we should not expect the same severe effects to proceed from it. Nevertheless, it is ever a safe rule to bear in mind how essential it is for the patient's ultimate well-being to be careful in the convalescent period of influenza, typhoid fever, rheumatism, diphtheria, the eruptive fevers, and pneumonia.

I have seen many times in the convalescent stage of these diseases the pulse remain unduly frequent for long periods of time, and I have likewise seen this tachycardia show itself after very slight exertion, when the patient otherwise seemed well and could scarcely be made to appreciate the importance of considering this symptom, which pointed clearly to weakness of the muscular walls of the heart.

Bradycardia may also be present, and the marked slowness of the pulse, going down frequently to fifty pulsations or less, may be the most important if not almost the sole evidence of impairment of cardiac power. Surely too much emphasis cannot be placed on the judicious valuation of this condition. If it be properly considered and wisely

treated not only will convalescence be in the end much shortened, but all danger of subsequent probability of cardiac dilatation will be avoided as far as may be.

It is manifest that in cases of moderate endocarditis or pericarditis, during their acute stage especially, it is incumbent upon us to insist upon absolute rest in bed in the recumbent posture (and even though the type of the disease in which it occurs may be very mild in character) for many days or even weeks; and yet, after all, I do not believe the danger from overexertion in these affections is half so great when they are unaccompanied with myocardial changes, nor do I believe that *per se* they are so threatening to the future well-being of the patient.

I do not deny that the facts to which I have referred are more or less well known to the average good clinician and wise practitioner; still, I know in my own case it has taken many long years of practical observation and experience, and the care of numerous patients, to thoroughly convince me of its very great interest and importance. Here is where, unfortunately, the modern text-book of practice falls far short of actual needs. Sayings similar in import to mine may be alluded to in a line or two, but that is about all, and unless a man's own thought and daily experience and observation serve to bring the facts constantly before him he is prone to ignore or forget them. Even modern text-books on cardiac disorders are apt to be far too brief, in my judgment, in treating of the importance of rest in the treatment of acute disease.

Most people will swallow drugs, cover themselves with lotions and liniments, be blistered or burnt, even go through a minor surgical operation, with far more equanimity and resignation than they will submit to being put to bed and remain there for days or weeks unless they are in great pain or are suffering from some marked disablement that they can thoroughly appreciate. The practitioner has a difficult rôle many times, especially during the convalescent period, in managing these patients to their own advantage.

It is not always wisdom to explain to people about their ailments. They try to understand the doctor's position, and yet they do not. They either exaggerate the gravity of their own case or ignore it far too much. Whenever it is a question particularly of the heart, infinitely more harm is sometimes done by showing accurately by explanation in what the danger consists than in part to avoid explanation, or not to speak at all, except to avoid making any categorical statement. This is, of course, deplorable for many reasons. Truth is mighty and should prevail, and an intelligent man or woman should claim the right to know precisely what the matter is and what the physician really thinks of their case. Just as soon, however, as the bald statement is made that the heart structure is at all affected, then they proceed by vain im-

aginings to make themselves miserable for a long, long while to come. It becomes almost impossible at times to disabuse their minds and make life tolerable to them. They fret and worry, become introspective and hypochondriacal, and lose snap and energy, which render their lives a burden to themselves as well as to others. They are often the victims of false dreads and foolish fears; they imagine they cannot recover and must always be, to a certain extent, invalids; they harp on their hearts, and they run from one physician to another to obtain expert judgment. It would seem as though the minds of such could be disabused, and that the earnest, convinced statement of their physician that they would get all right in time if they are only careful and sensible would be sufficient to quiet their fears and restore healthy mental fibre; but, alas! in many cases this unhappily is not true.

I do not wish to be understood as upholding at all that this should make the practitioner either untruthful or misleading, but I do mean to say that it should make him very, very careful and circumspect as to what he says. He must wholly gauge the disease he has to treat; he must, also, always consider the personality he has to do with; and singular it is that the very persons whom we might suppose are those least likely to be demoralized by the truth if spoken fully and without prevarication are, perhaps of all others, the ones to become most readily discouraged and ultimately the most miserable unless with much time, tact, and care they are absolutely convinced of the error in their thoughts.

With respect to the other treatment of endocarditis or pericarditis, if they be present, I would add that while I believe counter-irritation in the form of iodine or blisters very useful frequently in shortening their duration and intensity, I am not convinced that they would have much value in the treatment of independent myocarditis of the sort I have endeavored to study.

As to warm applications over the præcordia, and, better still, hot fomentations frequently repeated, and particularly where there is evident cardiac weakness, these I believe are of really great value. They certainly stimulate cardiac contractions to a very notable degree, and even though there be considerable increase already in bodily temperature, I recognize no strong objection to their use.

To my mind, the question of the amount of fever is often of secondary importance, and in nearly all cases is but one of numerous symptoms pointing to the intensity or gravity of the systemic poisoning. To combat it rationally and without manifest detriment to other expressions of disease may be all right, indeed probably is correct according to our actual knowledge. To do more than this is many times obviously uncalled for, and tends very much to produce harmful interference.

If the condition be already an adynamic one, where the bodily forces

are at a very low ebb and other forms of immediate and powerful stimulation are required, I fail to see why transmitted heat, properly applied, may not awaken and indeed partially restore wasted nerve force very much more certainly than cold. To cite particular instances in which this is true, even though not wholly analogous, would not be difficult.

In any great shock to the nervous system following a blow or fall; in the complete nervous depression from loss of blood; in the nervous exhaustion caused by fright or imminent peril; in the utter goneness accompanying bodily privations due to lack of food or sleep, heat locally applied over the heart, either as hot-water bag, hot compresses, mustard poultices (where it is combined with the counter-irritant), would be our first thought and usually prove most helpful; and as the body heat of an infective disease is in many particulars nothing very different from the other appreciable expressions of lowered nerve tone, why not make use of it promptly and efficiently?

As to the general treatment of endocarditis and pericarditis, I would naturally incline to the use of the salicylates in moderate doses if acute rheumatism were present; but I should be more than doubtful of their utility even in these instances where there were complications of the other febrile conditions studied in this article. Certainly, I would not give them where the nutrition was already at a low ebb or the stomach had shown signs of intolerance.

During the convalescent period of acute myocarditis complicating acute febrile diseases the indications for massage, resistant movements, and saline carbonic baths, according to the Schott system employed originally at Nauheim, seem pretty clearly defined.

It is to be borne in mind, however, that just as dyspnœa is often a very marked symptom of myocarditis in its most acute stage, so later it will frequently guide and direct us as to the efficacy of the movements and baths and the duration of them. On its appearance in any notable degree they should be stopped and only resumed with great care and moderation. Harm results more frequently from doing too much at too early a period than through a judicious reserve as to both of these considerations.

It is true that the Nauheim treatment employed at the springs, or artificially used elsewhere, may prove to be very beneficial in well-selected cases, even though the heart fibres be degenerated. It is, also, unquestionable that where the degeneration is far advanced and the general nutrition has become much undermined by previous disease or advancing years, it may work more than passing harm and become of very little real value, but rather detrimental than the reverse.

Acute myocarditis may and does occur frequently among children as a complication of their acute febrile diseases, and especially is

this to be remembered in scarlatina, whooping-cough, diphtheria, and measles.

I am confident that this acute degeneration of heart muscle will many times explain sudden failure of cardiac power when apparently the patient is progressing favorably. I am also convinced that it will explain the delayed convalescence of numerous cases in which this complication would easily be disregarded or overlooked unless particular attention be directed to it. No doubt many instances of subsequent cardiac dilatation, with or without accompanying hypertrophy, have been occasioned solely by inattention to or ignorance of this muscular degeneration.

The very activity of children, their desire to play and romp and tire themselves with their games and contests, is an additional reason why special care should be exercised so as to ward off an unfortunate sequela which may be otherwise lasting and troublesome. I have not infrequently met with cases which, as I interpret them at present, may trace their later cardiac inadequacy to the influence of diseases of early childhood.

I do not believe, in my experience, that the acute myocarditis of children differs very materially, so far as symptoms go, from the same disease in adults. The ultimate prognosis, however, it seems to me, is less serious, simply because the nutrition of the child being usually more active his cell elements are re-established sooner and more surely, and hence the untoward, far-reaching effects of cardiac weakness are less likely to become manifest.

REVIEWS.

THE INTERNATIONAL TEXT-BOOK OF SURGERY BY AMERICAN AND BRITISH AUTHORS. Edited by J. COLLINS WARREN, M.D., LL.D., Professor of Surgery in Harvard Medical College; Surgeon to the Massachusetts General Hospital, and A. PEARCE GOULD, M.S., F.R.C.S., Surgeon to Middlesex Hospital; Lecturer on Practical Surgery and Teacher of Operative Surgery, Middlesex Hospital Medical School; Member of the Court of Examiners of the Royal School of Surgeons, England. Vol. I. General and Operative Surgery. With 458 illustrations in the text, and nine full-page plates in colors. Philadelphia: W. B. Saunders, 1900.

THIS praiseworthy work has been prepared under the editorship of an American and an English surgeon, each of international repute, with the collaboration of thirty-three American and fourteen English authors. When we come to examine the authorship of the sixty-three chapters that compose the two volumes we find that some forty-six, or more than two-thirds, are from the pen of American surgeons, so that while the work is, strictly speaking, of international authorship the number of chapters by American exceed those of English authors.

In their preface to the first volume the editors announce that their aim has been to produce a reliable text-book of surgery, embodying a clear but succinct statement of our present knowledge of surgical pathology, symptomatology, and diagnosis, and such a detailed account of treatment as to form a reliable guide to modern practice, and that, while not aiming at the merely novel, they have carefully omitted antiquated methods, and hope that the reader will find in these pages only what is practically useful to-day. Reviewed from such a standpoint, it may be said that the editors have been eminently successful and have produced a book which in every way fulfils the obligations as announced in the introduction.

It is a difficult matter to review, in the space ordinarily allotted, with any very great thoroughness a work covering such an enormous field and exploiting the views of some threescore authors. Many of the chapters are, in point of fact, monographs of the subject treated, assigned to, in many instances, individuals who have had so much experience in that particular branch that their writings are not a mere compilation, as so many of the works turned out to-day, but embody the views and opinions of one who can speak authoritatively. Everyone recognizes, however, the necessity of resorting to this plan in the preparation of a modern text-book, as it is practically impossible for one man to write authoritatively on the vast range of subjects embraced in the field of surgery. One has but to refer to the authorship of the various chapters to be assured of the intrinsic worth of this text-book. Thus, in Vol. I., Cabot contributes an article on the Blood; Warren, on Inflammation, Erysipelas and Gangrene, as well as on a

number of other subjects; Pilcher, on Fractures; Watson Cheyne, on Diseases of the Bone; Bland-Sutton, on Tumors; Bradford, on Congenital Dislocation of the Hip, Flat-foot and Club-foot. In Vol. II., McBurney has been assigned the subject of the Vermiform Appendix; Fenger, the Kidneys; to Bull, the subject of Hernia; to Mayo Robson, the Diagnosis of Abdominal Diseases, and, again, to the senior editor, the Surgery of the Breast, the Technique of Abdominal Surgery, Acute Intestinal Obstruction; and to T. Orne Green, the Surgery of the Ear.

The arrangement of the subject-matter conforms in general to that of modern text-books. Vol. I. is devoted to general surgery, including the effects of traumatism and inflammation, anæsthesia, operative technique, minor and operative surgery, injuries and diseases of the various systems, including the bones, the joints, the lymphatics and bloodvessels, the nerves, muscles, tendons, and bursæ. Vol. II. is devoted to the various branches of special or regional surgery, and contains some of unusual character, such as a chapter on the Influence of Age and Race on Surgical Affections; chapters on Military and Naval Surgery, by medical officers of the respective services; one on the Traumatic Neuroses, and another on Tropical Surgery, by Cantlee, a lecturer at the London School of Tropical Medicine.

The question might arise as to the necessity of a modern surgical book containing articles which treat of subjects belonging, strictly speaking, to the specialties, such as the eye, the ear, gonorrhœa, and syphilis. The presence of chapters on these subjects no doubt enhances its value as a work of reference for the general practitioner, although it is not likely that the aural or the ophthalmic surgeon or the genito-urinary specialist will purchase a treatise on general surgery solely to have at hand the one chapter in which he is more particularly interested. The same might be said of surgical bacteriology, a subject which has of recent years made such rapid strides that it is a difficult matter to cover even the elements of the subject in a single chapter. As a matter of education, however, it is a good object lesson for the medical student to see the first chapter of a surgical text-book given up to surgical bacteriology; he is taught thereby to appreciate the immense value to the surgeon of the information which has emanated from the laboratory of bacteriology.

Repetitions are noticeable here and there, but these are unavoidable in books so arranged. Thus, for example, tuberculous lymphangitis is treated under three headings—under that of surgical tuberculosis, under the surgery of lymphatics, and for the third time in the chapter on the Surgery of the Neck. The chapter on Surgical Tuberculosis might well have been omitted, as it belongs more properly to works on general pathology. So much of the pathology of tuberculosis with which the student should be familiar may be discussed in connection with the tissue systems, the lymphatics, the genito-urinary organs, the bones and joints, and so on; in fact, the most common manifestation of surgical tuberculosis, joint and bone tuberculosis, is not discussed in this chapter at all.

Again, in the chapter on Diseases of the Joints, the author by way of introduction airs his views on the pathology of inflammation, which has already been very properly treated in one of the early chapters. Osteitis deformans is treated under a separate heading in the chapter

on the Diseases of the Bones, and, again, with rheumatoid arthritis in Diseases of the Joints. These commentaries are passed not in the sense of reflections, but as indications of how in a future edition the authors might practice some economy as to the number of pages without affecting the usefulness or popularity of their text-book.

The chapter on Special Joints should either be omitted or the subject-matter inculcated with that on Diseases of the Joints. As it stands now it reflects no credit upon the book as a whole. However familiar the author may be with his subject, he has not expressed his ideas in a way that calls for any great amount of commendation. Thus he writes, "that in neglected or obstinate cases the *flexed and slung* limb *has to be tied up* against the trunk for months, but may often be *got well* with perseverance." Again, "in the progress to recovery the arm *at first continues* disabled;" again, "arthritis of the shoulder in cases of *tubercle* or *osteomyelitis* is frequently attended with abscess, *which may burst and leave sinuses.*" Inflammation of the hip-joint may attend other (*i. e.*, other than tubercular) *infective states or general disorders of the system*, etc. One is told that "*puffy œdema* may easily occur in sprain of the shoulder."

The teachings propounded throughout are, on the whole, sound, and there are no noteworthy contradictory statements, such as are apt to appear in books of composite authorship. We think it a much better plan to teach the student to disassociate those conditions which result on the one hand from traumatism, and, on the other, from microbic invasion, reserving for the latter the term inflammation; "that the changes produced by inflammation are those expressive of destruction rather than repair;" and that the alterations in the structures met with after traumatism are but the reaction upon the part of the tissues necessary to effect reparation. The other view is taken, however, and inflammation classified as simple (of traumatic origin) and infective (of microbic origin).

The chapter devoted to Constitutional Effects of Wound Infection is exceptionally well written; the subject is treated in the light of the most recent addition to our knowledge of these fevers. One hesitates, however, to indorse a more complicated classification of a subject already so confusing to the student. The introduction into this class of so-called surgical fevers of a form of fever styled septic intoxication, which is described as a disease due to the resorption of poisons from foci of suppuration, seems perfectly reasonable, but the same cannot be said of septicopyæmia, "which is used to convey the impression that the symptoms of sepsis are present as well as those of pyæmia." It is difficult enough already to draw any sharp lines clinically between pyæmia and septicæmia; why, therefore, make matters still more complicated by attempting to recognize a third variety?

In the chapter on Gangrene one notes the novel way in which the various forms of gangrene are classified, the classification being based on the size and nature of the vessels involved. Thus: 1. Gangrene due to impairment of the general circulation. 2. Obstruction of main arteries and veins. 3. Obstruction of the smaller arteries. 4. Obstruction of the arterioles. 5. Obstruction of the capillaries and venules.

There are a number of chapters which are deserving of the highest commendation, and therefore should not pass unnoticed. Those are the chapters on Wounds and their Repair; on the Constitutional Reactions

to Wounds and their Infections; on the Technique of Aseptic Surgery —a chapter which in point of thoroughness should stand at the head of the list—on Anæsthetics, which includes an excellent consideration of nitrous oxide gas; and on Fractures and Dislocations.

In Vol. II., the chapters on Hernia, on the Breast, on the Stomach and Intestines, on the Vermiform Appendix, on the Traumatic Neuroses, and on Military, Naval, and Tropical Surgery are all of a high order of excellence. The authors have provoked some adverse criticism by the manner in which they have subdivided the subjects. Thus, genito-urinary diseases are treated in four chapters, by as many authors, one being devoted to the ureters, one to the kidneys, one to the urethra, bladder, and prostate, and a fourth to the scrotum and testes. The surgery of the œsophagus has been isolated from the chapter on Surgery of the Neck, as has the surgery of the uterus from the chapter on Gynecology. Just as in Vol. I., the subject of the joints was subdivided as follows: injuries of the joints, dislocation of the hips, diseases of the joints, diseases of the special joints, congenital dislocation of the hip, flat-foot, club-foot. If the book is to be used as one of reference, pure and simple, this arrangement of the subject-matter will not detract from its value; if as a text-book, however, it would have been better had the matter been entrusted to fewer authors.

On the whole, however, it may be said that this international text-book of surgery is modern in every particular, most comprehensive in its scope, sound and practical in its teachings, and is wholly deserving of the popularity already won. C. H. F.

TRAITÉ DE CHIRURGIE D'URGENCE. Par FÉLIX LEJARS, Professor Agrégé à la Faculté de Médecine de Paris. 482 figures dont 193 dessinées d'apres nature, par le DR. E. DALEINE, et 103 photographies originales. 8 vo., pp. 751. Paris: Masson et Cie, 1899.

A TREATISE ON EMERGENCY SURGERY. By FELIX LEJARS.

THE title of this volume strikes one at first as not altogether satisfactory, but the criticism is perhaps sentimental rather than real. A book with a somewhat similar title, namely, *Imperative Surgery*, has recently been published in America to which the same objection has suggested itself. These titles are suggestive of an effort to be sensational, a trait always objectionable in scientific writing.

An inspection of Professor Lejars' book, however, shows that it is written in the truest scientific spirit, and by a surgeon evidently well grounded in the principles of modern surgery and of the keenest surgical perception. He truly says that the number of emergency operations has been extended as operative results have become more positive through modern scientific surgical methods. As surgeons are better armed, he who accepts the designation of physician or surgeon accepts by that act a greater degree of responsibility than was formerly the case.

He explains that his book is written to show what ought to be done in emergencies, when a physician, who does not take up surgery as a specialty, meets with cases requiring surgical treatment and cannot

obtain the aid of a consultant, or when a surgeon is far from the resources which surround him in a hospital. Very true is his statement that even if a physician never expects to operate he should at least be familiar with the present resources and operative successes of surgical art. Operations of emergency surgery should therefore be familiar to physicians as well as to professed specialists in surgery.

The author properly lays stress upon the fact that instruments and dressings for emergency operations should always be ready for transportation by the surgeon in order to save precious time when urgent operations are to be done. Some form of bag or satchel filled with the usual instruments and dressings is demanded for such use. Complicated methods of sterilization are not discussed, but an effort is made to show how things may be done in a simple and efficient manner when the surroundings of a well-stocked hospital operating-room are not accessible.

The author believes in the use of ether rather than chloroform as an anæsthetic, and is evidently aggressive and up to date in the treatment of fractures, injuries to the skull and brain, and perforating wounds and other lesions of the abdominal and pelvic organs.

An interesting feature is the introduction of emergency operations in conditions of the eye and ear. His injunction that iridectomy should be done at once for acute glaucoma is an indication of the thoroughness with which these questions not usually discussed in surgical text books are handled. In the same way, his insistence upon complete reduction of fractures of the lower end of the radius shows a familiarity with the practical side of the treatment of this often neglected injury.

The articles on wounds of great vessels, foreign bodies in the air passages, urgent conditions of the heart and lungs, ruptures of the urethra, and hernia will be read with the greatest benefit by the surgical specialist, as well as by the general practitioner who, as a rule, does not expect to assume the responsibility of surgical operations.

Dislocations, injuries of nerves, and imperforate anus are discussed because they often need prompt operative relief.

An inspection of this volume makes it clear that it is a valuable book of reference which will do very much to add to the reputation of the author and to which the surgical teacher can with benefit refer. The very numerous illustrations are unusually beautiful and demonstrative.

J. B. R.

MANUAL OF SURGERY. By CHARLES STONHAM, F.R.C.S. ENG., Senior Surgeon to the Westminster Hospital, etc. In three volumes. New York: The Macmillan Co.

THE present is an age of labor-saving devices, and among such devices are manuals. Many manuals have recently come from the press. The term manual is decidedly elastic. It is supposed to mean a rather diminutive book or at least one of a convenient size which contains the elements of a science. Undoubtedly the usual conception of a manual is a small book, but at the present day the size of such publications varies according to the "taste and fancy" of the writers, to use Mr. Samuel Weller's expression. For instance, the splendid two-volume book upon *Operative Surgery*, written by Mr. Frederick

Treves, and modestly called a manual, is thorough, is complete, and consists of about 1500 large pages. Some teachers are bitterly opposed to manuals, claiming that such books are read to the exclusion of larger and more comprehensive treatises, the effect being to make the student lazy and superficial. There is much force in this criticism, and if a manual itself is superficial and produced lazily we think the condemnation proper. If, however, a manual is of the right sort, is not superficial, and is not the product of dulness, we do not agree with the criticism. It is true that the use of a manual to the exclusion of larger works is an evil, but it is better to read a small book carefully than to read a large one carelessly or not at all. Good students will use a manual properly—that is, in association with and in subordination to a larger text-book. Bad students will not study an encyclopædic text-book under any circumstances, and will study a manual or will study nothing. It might be said that there should be no such indifferent students. Such a statement would be true, but poor students exist because of an evil system, and they will continue to exist until the system is amended. Conditions must be met as they exist, and we should do our best to educate even indifferent students into safe if not into brilliant men.

A well-written manual not only concentrates and condenses, but winnows the chaff from the grain, elucidates obscure views and difficult propositions, and is a great help to even the best of students. By its aid a student can refresh his memory; can read up subjects not touched upon by a lecturer; can find out what he needs to study in a larger book, and can store his mind with truths and essentials. A good manual is a very different thing from those pernicious productions which are used to "cram" for examinations. A good manual is sure to be used often, and the term which really fits it is the word in its older and better sense—that is, a book constantly in the hand. The word was thus used in referring to the office-book of the Catholic priests of mediæval England. Stonham's book belongs to the class of good manuals. It consists of about 1400 pages, and is divided into three volumes, each one being of convenient size.

Vol. I. treats of General Surgery; Vol. II. of Injuries; Vol. III. of Regional Surgery. The book contains a section on injuries of the eye and their effects, by Mr. Donald Gunn.

We regard this manual as a very useful book. It is tersely and clearly written, and most of the statements are definite and sufficiently positive. It is not a mere compilation, but represents the views of a surgeon of large experience, who knows whereof he speaks; one who, to drop into the vernacular, "has often been there." Unfortunately many of the pictures are crude and poor, and some of them are atrocities. For instance, Fig. 29, Vol. III., is a cut which would justify any self-respecting rickety skeleton in bringing suit for libel.

We have not the space to do more than hint at Mr. Stonham's views. We are glad to see that he does not think inflammation is always due to bacteria and always destructive. The contrary opinion is enunciated so peremptorily by our laboratory lords and masters that we often loose sight of clinical facts. Adami has called us back to common-sense by pointing out that inflammation is reaction to injury and an effort to effect repair.

Stonham regards fibrin ferment as the cause of septic fever, although Schnitzler and Ewald seem to prove that nucleins and albumoses are

the real causes. The author advocates high amputation in senile gangrene; does not consider diabetics such hopeless subjects for operation as is generally thought; believes that emphysematous gangrene is due to the bacillus of malignant œdema, and does not mention the bacillus aërogenes capsulatus; does not differentiate clearly when to use heat in inflammation; shares with most observers doubt as to the value of tetanus antitoxin, and points out that though amputation is discredited in tetanus, as the bacillus is confined to the wound, amputation ought to remove it; disbelieves in the abortive treatment of gonorrhœa; treats only exceptional cases of syphilis by hypodermatic or intravenous injections of mercury; maintains that Ducrey's bacillus is the cause of chancroid, admitting, however, that pyogenic organisms may also be present; operates early in hare-lip, that is, between the fourth and sixth week of life, if possible, and always before the seventh month; operates upon a cleft of the soft palate when the child is about one year old, and operates upon a cleft of the bony palate when the child is between its fourth and sixth years. An operation between the fourth and sixth years is far earlier than was formerly advised, but Mr. Owen —and, we think, wisely—operates earlier still. Owen operates during the second year, because if operation is deferred longer speech will be permanently impaired.

Stonham, in speaking of shock, says that in very rare cases the patient should be bled. He advocates bleeding when the heart's action is extremely feeble and the jugulars are full and distended. Personally, we have never seen a case in which we considered bleeding advisable or even safe.

The author maintains that delirium tremens and traumatic delirium are clinically identical; that in many cases of fracture of the patella Barker's method is the best treatment; that tracheotomy is to be preferred to intubation; that in the operation of nephropexy the sutures should be composed of kangaroo-tendon, and should pass through the kidney-substance, and that Kraske's operation should not, as a rule, be preceded by colostomy. We regret that in the article upon dislocations of the hip-joint he does not even notice the brilliant and original studies of Allis.

Stonham advocates radical extirpation of the tongue for cancer, but does not remove the glands beneath the jaw unless they are enlarged. Glandular infection takes place usually by emboli, and the glands are diseased for some time before they are obviously enlarged. We think that a thorough operation should include removal of the glands whether they are palpable or not. In speaking of cancer of the lip, he does not speak of removal of the glands, and yet in these cases the obligation to remove the related gland is as imperative as it is in cancer of the tongue or cancer of the breast. Stonham's operation for the radical cure of hernia impresses us as quite inadequate, and he reserves Bassini's operation for bad cases or "when recurrence after operation has occurred." Unfortunately, he fails to describe in detail the modern "thorough" operation for cancer of the breast. Stonham's views on appendicitis may justly be described as antiquated. In subacute cases he employs rest in the dorsal position, applies hot fomentations to the iliac region, and sometimes leeches to relieve pain. He gives opium in sufficient amount to relieve pain, and opens the bowels by enemata, or, if necessary, by small doses of sulphate of magnesia. In very acute cases he

opens the abdomen and removes the appendix. In an abscess he evacuates the pus by an incision, but "makes no attempt to find the perforated appendix," though "if it presents in the wound" he removes it.

We disagree radically with some of Mr. Stonham's statements, but nevertheless recognize the arguments upon his side of the case and cordially recommend the book. J. C. Da C.

Minor Surgery and Bandaging. By Henry R. Wharton, M.D., Demonstrator of Surgery in the University of Pennsylvania, etc. With 502 illustrations and 594 pages. Fourth edition. Philadelphia and New York: Lea Brothers & Co.

But little need be said as to the merits of this work, for, if we may judge from the reception accorded to the previous editions, we feel assured that the fourth edition of this work will receive a most cordial welcome.

The text has been thoroughly revised, which, with the new material added, brings the work up to the standard of the most modern surgical teachings.

A new chapter on Surgical Bacteriology gives a concise description of the various kinds of micro-organisms; the methods of their cultivation, inoculation, and staining; also a clear and sufficiently thorough description of the varieties of surgical importance.

No portion of the work should appeal to the student more than the section devoted to the operative procedures that may be practised upon the cadaver, most of the operations being accompanied by very good cuts.

In this, as in the previous editions, the author's concise manner of dealing with the essentials of a subject has not been sacrificed, and we can truthfully say that the fourth edition has but further enhanced the value of this work to the medical student. T. C. H.

Atlas and Epitome of Gynecology. By Dr. Oskar Schaeffer, Privatdocent of Obstetrics and Gynecology in the University of Heidelberg. Authorized translation from the second revised and enlarged German edition. Edited by Richard C. Norris, A.M., M.D., Surgeon-in-charge, Preston Retreat, Philadelphia; Gynecologist to the Methodist Episcopal Hospital and to the Philadelphia Hospital, etc. Pp. 272. With 207 colored illustrations on 90 plates and 62 illustrations in the text. Philadelphia: W. B. Saunders & Co., 1900.

Those who are familiar with the first German edition of this work will note many improvements and additions which render it almost a new book. Of the illustrations it is difficult to speak in too high terms of approval. They are so clear and true to nature that the accompanying

explanations are almost superfluous. We would call attention especially to the chapters on Displacements, Laceration of the Cervix, and Neoplasms of the Uterus. That on displacements condenses a vast amount of useful information within the limits of a few pages.

Ovarian cysts are fully described and illustrated. The important subject of pelvic inflammation is clearly set forth. Although the text is exceedingly condensed, as would be expected in an epitome, the whole field of gynecology is well covered, even the subject of operative technique receiving considerable attention.

Non-surgical treatment is carefully considered, with especial reference to the newer remedies. Atmocausis is described on page 115. A useful therapeutic table is appended. In general we may add that the book is typical of the great advances made in the teaching of gynecology during the past few years, when clinical facts have taken the place of theories. We commend it most earnestly to students and practitioners.

H. C. C.

L'ANNEE CHIRURGICALE, REVUE ENCYCLOPEDIQUE DE CHIRURGIE GENERALE ET SPECIALE. Publiée par le DOCTEUR A. DEPAGE, Agrégé a l'Université libre de Bruxelles, Chirurgien des Hôpitaux de Bruxelles. Première année, quarto, pp. 1970. Bruxelles: Henri Lamertin, 1899.

THE SURGICAL YEAR. AN ENCYCLOPÆDIC REVIEW OF GENERAL AND SPECIAL SURGERY.

THIS work is a comprehensive review of the literature of general and special surgery published during the year 1898. The editor, Dr. Depage, has as associates in the labor of compilation over fifty professional colleagues. His desire is to continue the publication annually and thus to give to the medical world the benefit of the new ideas emanating from students of surgical science in all countries. An indirect result of this record of surgical progress will be to give early diffusion to novelties in treatment and thus benefit mankind in general. It will also serve to obviate unnecessary experimental work in directions already investigated and to settle claims of priority in discovery or invention.

It is stated that 8000 original works have been translated and analyzed in the preparation of this volume, and the editor offers, in order to have authors' views properly presented, to print short abstracts prepared by the authors themselves. The scientific portion of the encyclopædia is prefaced by a short necrology, giving a list of surgical workers deceased during the year.

In its general characteristics *L'Année Chirurgicale* resembles Sajous' *Annual of Universal Medical Sciences*, which was, during its existence, such an aid to those desirous of keeping informed of medical progress. It, however, deals with surgery only, and to a certain extent will fill the place formerly held by Sajous' *Annual* and the *Index Medicus*.

The book is divided into sections, each dealing with a particular department of surgery; but as these are not arranged alphabetically, and there is no index, it will be difficult for the reader to find that which he seeks.

J. B. R.

PROGRESS

OF

MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM OSLER, M.D.,

PROFESSOR OF MEDICINE IN THE JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND,

AND

GEORGE DOCK, M.D.,

PROFESSOR OF MEDICINE IN THE UNIVERSITY OF MICHIGAN.

A Peculiar Form of Chronic Icterus.—BETTMANN (*Münchener medicinische Wochenschrift*, 1900, No. 23) reports the following: A merchant, aged twenty-nine years, was jaundiced since childhood. The icterus varied in intensity at times, but never disappeared completely. Exacerbations were often preceded by chills and tugging pains in the body and extremities. After a few hours the jaundice was worse and remained so for half to a whole day. The urine was then darker, sometimes blackish. After such attacks the patient felt weak. The attacks decreased in frequency and in intensity. There was no pain in the right side, but at times pain and an increasing pressure in the left side. Otherwise there were no symptoms, except that the stools were irregular (diarrhœa alternating with constipation), never pale, but often dark. There was no history of malaria or syphilis. For several years the patient had severe attacks of nose-bleed. The family history was negative. Physical examination showed distinct, but not intense, jaundice, the liver was barely palpable, the gall-bladder region negative. The spleen was greatly enlarged, measuring 16 by 27 cm., harder than normal, tender on pressure. The urine showed a urate sediment, but contained no bile-pigment, urobilin, or hæmoglobin. The blood showed red blood-corpuscles, 4,216,000; leucocytes, 8800; hæmoglobin, 75 per cent.

The author was at first inclined to look on the case as one of Hayem's "ictère chronique infectieux splenomegalique," but further investigation of the history opened up another explanation. The patient said that the exacerbations were usually due to excessive eating or drinking, to psychic excitement, excessive muscular exercise, such as marching and dancing, and especially to cold. He was extraordinarily influenced by cold, and in winter the jaundice was always worse. This led to the supposition of hæmoglobinuria, and, as a matter of fact, the patient had had the urine examined after an attack, with the result that blood-corpuscles and hæmo-

globin were found. The effect of marching and of immersing the hands in ice-water was tried, and with positive results. After immersing the hands for ten minutes the patient began to yawn and shiver and then sweat. He complained of nausea and vertigo; vomited; had pain in the arms. In a few hours the jaundice was more intense. The urine contained albumin and red blood-corpuscles, but no bile-pigment or hæmoglobin. The blood showed no distinct change from the former examinations, so far as the count was concerned, but there were numerous shadows, and staining revealed marked polychromatophilia. The blood-serum showed dissolved hæmoglobin. The patient was seen frequently, and repeated examinations of the urine were made. Bile-pigment was never found, though there were traces of urobilin. The other conditions were unchanged. The author concludes that the patient had a hæmoglobinæmia, usually with abortive paroxysms, the blood coloring matter being altered before it could be excreted in the urine. This might be due to a congenital abnormality of the blood. From the difficulty of investigating such a case during the paroxysms the author raises the question whether in Hayem's cases hæmoglobinæmia may have been overlooked—a thing that is all the more possible because the symptoms of the attack are such as could readily be ascribed to liver disease, especially biliary colic. The treatment of the case was purely symptomatic and tonic, with avoidance of those things that were likely to bring on an attack. Most of the subjective disturbance was due to the enlarged spleen, but with the probability that this was spodogenic, having the object of working over the excess of broken-down blood-corpuscles, extirpation could not be recommended.

Prognosis in Glycosuria and Diabetes.—HIRSCHFELD (*Berliner klinische Wochenschrift*, 1900, No. 26) concludes a thoughtful article on this subject as follows: All authors agree that the prognosis in the milder forms of diabetes is more favorable than has hitherto been considered by the profession.

Relative recovery—*i. e.*, absence of glycosuria with the ingestion of 200 grains of carbohydrates daily—is to be expected when in the beginning of the disease 80 to 85 per cent. of carbohydrates are consumed in the body.

Lessened assimilation of carbohydrates may be observed after influenza, after peculiar colicky attacks (pancreatic colic), and to an especially severe degree in cases with furuncle and gangrene.

Increased severity of glycosuria is sometimes indicated by increased quantity of urine, improvement by diminished excretion.

At times increase of glycosuria coincides with rapid increase of weight, and subsides when the diet is restricted.

The cardiac weakness so common in diabetes is most favorably influenced by mild antidiabetic diet, not wholly excluding carbohydrates.

The Cause of the Presystolic Murmur.—GIBSON (*The Edinburgh Medical Journal*, September, 1900, p. 212) draws attention to the extensive discussion that has taken place in regard to the explanation of the murmurs of mitral obstruction, ever since the discovery of the purring thrill by Corvisart and of the presystolic murmur by Fauvel. He points out that the murmur of mitral stenosis occurs at the apex, and may occur immediately after the

second sound—usually termed diastolic; or occurring a little later—therefore sometimes called post-diastolic, or taking place immediately in advance of the first sound—the well-known presystolic murmur. While the existence and character of these murmurs is well recognized, there is considerable difference of opinion as to the explanation of their occurrence.

The usual explanation given for these murmurs is that those of diastolic and postdiastolic rhythm are produced by the active diastole of the left ventricle drawing blood from the auricle, but also aided by the general onward current of the blood, impelled through the pulmonary artery and pulmonary veins by the right ventricle, which in such cases is always hypertrophied. The presystolic murmur has been and is generally considered as due to the contraction of the left auricle, and its absence, or disappearance and reappearance, attributed to varying degrees of weakness of this part of the heart. Gairdner advanced this explanation for the presystolic murmur, and his view was later confirmed and amplified by Tagge and Balfour, and has been adopted by the profession generally. Its acceptance, however, has not been universal.

The first person to express doubt as to the correctness and sufficiency of Gairdner's explanation was Ormerod in 1864. He raised the question whether the presystolic murmur was due to obstruction to the flow of blood from the auricle to the ventricle during the auricular contraction, or to imperfection of the auriculo-ventricular valve, allowing regurgitation during contraction of the ventricle. He expressed doubt whether the contraction of the auricle, slight and momentary as experimentalists then believed it to be, could produce so loud a sound. He saw no objection to the second view, "which assumes that coaptation of all the portions of the valves is not simultaneous; but that when at a certain point of contraction the valve is closed the regurgitant stream is cut off and the cessation of the murmur coincides with the sudden jerk of valvular tension." Barclay, Charlwood Turner, and Dickinson with slight modifications supported the ventricular causation of the presystolic murmur advanced by Ormerod. Brockbank has given his support to the "heretical theory," as he calls it. His view is that "the crescendo murmur of mitral stenosis is produced by blood regurgitating through the stiff, rigid orifice of the narrowed valve, while the orifice which resists closure is being rapidly diminished in area and finally obliterated by the action of a strong force, which on its part increases rapidly in strength with the duration of the bruit."

Brockbank holds that any theory which explains the production of a crescendo murmur must hold good no matter what the condition of the left auricle may be, and he states that the murmur not uncommonly occurs in cases in which the auricle is dilated and weak.

Cowan and Gibbes, in recent articles, with slight variations cast their opinion on the side of the "orthodox theory" of Gairdner. The former holds that the murmur of mitral stenosis is caused in its earlier portion by the blood driven through the thickened valves, by the auricular systole, and in its terminal part by blood flowing into the ventricle while changes in the tension of the valves and alterations in the lumen of the orifice are taking place, the result of the contraction of the ventricle as a whole and of the musculi papillares in particular.

Gibson then proceeds to weigh the arguments advanced in favor of the two theories. He supports Gairdner's theory of the causation of the presystolic murmur. He says that the one simple fact that the presystolic murmur may begin as a diastolic murmur with the second sound, and be continued, without appreciable alteration in its character, up to the first sound, to his mind entirely negatives the regurgitant theory of the presystolic portion, which would require an absolute revolution in our knowledge of the cardiac mechanism.

[With this view I believe a majority of teachers on this side of the water agree.—W. O.]

The Pituitary Gland as a Factor in Acromegaly and Giantism.—Woods Hutchinson has written a series of very interesting articles on the above subject. The early papers were published in 1898, and the more recent ones have just appeared.

Hutchinson points out in his first paper that previous to 1890 the pituitary gland was almost unanimously regarded as a purely vestigial structure and possessing no present value to the organism. In that year interest in its function, if it possessed any, was aroused by the announcement of Souza-Leite, that the gland was markedly enlarged in most cases of the disease known as acromegaly, which was first described by Marie in 1886.

As a result of the analysis of the literature on the subject, and in particular of nineteen cases of acromegaly in which microscopic study of the enlarged pituitary gland was made, Hutchinson draws the following conclusions:

1. That the pituitary body is still functional.

2. That disturbances of its metabolism are the principal factors in both acromegaly and giantism, the difference between the results being simply due to the stage of individual development at which the disturbance of its function begins.

3. That the nature of the overgrowth in both these diseases is primarily on the order of a pure functional hypertrophy; later, however, losing some of the definiteness of its impulse, and either producing immature tissue of a mixed type or resulting in simple hemorrhagic exudation, with either cyst formation or complete breaking down of the tissue mass.

4. That it seems probable, although upon this head the evidence is still uncertain, that some part is played by this body in "dwarfism," rickets, and the dwarf forms of cretinism.

5. That a reflex disturbance of its function may possibly underlie the distrophy accompanying pharyngeal adenoids.

6. That it would appear to be a sort of "growth centre" or proportion regulator of the entire appendicular skeleton.—*New York Medical Journal*, vol. lxvii., 1898, pp. 341, 450, and vol. lxxii., 1900, July 21 and 28.

Tracheal Tugging in Mediastinal Tumor.—Auerbach (*Deutsche medicinische Wochenschrift*, 1900, No. 8) reports two cases illustrating the necessity of using Oliver's sign in the diagnosis of suspected aortic aneurism. In one case there was a primary cancer of the stomach with metastases in the abdomen and the supraclavicular and bronchial glands. Over the upper part of

the thorax there was a diffuse, weak systolic shock, but no circumscribed pulsation. The manubrium and body of the sternum showed an area of dulness continuous with the slightly displaced heart dulness. Oliver's symptom of systolic downward tugging of the larynx was distinctly present while the breath was held. On pressing the larynx toward the left a distinct pulsation from left to right could be observed, but on pressing the cartilage to the right the lateral pulsation described by Cardarelli could not be seen. Although Oliver's symptom was very distinct, there were no other points in the history or physical condition to confirm it. It was, therefore, ascribed to a mediastinal tumor, as A. Frankel suggested might occur. The autopsy confirmed this. The mediastinum was filled with a mass of cancer nodules adherent to the vertebra and surrounding the aorta. The trachea was also surrounded, and the new growth extended into the peribronchial tissue, especially around the left bronchus, where it formed a mass three to four centimetres thick between the arch of the aorta and that bronchus, and closely adherent to both. The peculiar relation thus brought about between the aorta and the left bronchus had the same effect as an aneurism on the under surface of the aorta, with the exception that in the present case the systolic dilatation of the aorta was communicated to the bronchus, and in that way caused the tugging of the trachea and larynx.

In the second case a man, aged forty-eight years, formerly the subject of rheumatism and nephritis and dyspnœic for some time, was suddenly attacked with cough and hæmoptysis. Similar attacks occurred again at intervals, with loss of weight. There was dulness over the left side of the chest, with distention in that part. The heart was slightly enlarged, with marked epigastric pulsation and systolic shock in the heart region. Oliver's sign was distinct. The sputum was watery and contained blood and mucus. Many examinations for tumor cells were negative. The diagnosis lay between mediastinal tumor and aneurism of the arch of the aorta, leaning to the latter on account of the uncertain differential diagnostic features and the positive tracheal tugging. Autopsy, however, showed that there was a bronchial carcinoma of the left lung, with metastases to the bronchial lymph-glands, extensive indurative pneumonia of the left upper lobe, and chronic endocarditis of the aortic and mitral valves. Between the bronchus and the aorta were several moderately enlarged lymph-glands, forming a mass the size of a walnut, attached both to the under surface of the arch and the bronchus. Although such conditions occur but rarely, they lessen the diagnostic value of Oliver's sign and make it all the more necessary to examine all the other signs carefully as well as to lay due importance on the history.

Symptoms of Brain Pressure in Typhoid Fever.—SALOMON (*Berliner klinische Wochenschrift*, 1900, No. 6) has been struck by observing in a number of cases of typhoid fever that the optic nerves gave an ophthalmoscopic picture resembling that seen in cases of intracranial pressure. There was not a distinct papillitis, but the papilla looked more or less veiled, its capillaries were injected, its edges indistinct—though often only on the temporal side—its veins somewhat dilated and tortuous. He therefore practised lumbar puncture in four cases and found, in fact, that the spinal fluid was under high pressure in all of them, viz., from 180 to 250 millimetres of water.

The fluid in all cases was sterile, the albumin and number of leucocytes were not materially increased. In three cases in which the blood serum caused agglutination, in one case up to 1:500, the spinal fluid did not share this quality. (The author promises a further report showing that the cerebro-spinal fluid does not possess the bactericidal action of blood serum.) Brain symptoms in typhoid fever might be explained in three different ways: In the first place by a purulent meningitis with typhoid fever in the exudate; second, by direct toxic action; and third, perhaps through the action of toxines, by an intrameningeal exudation. The latter explanation is adduced by the author in his own cases, in which the cerebral symptoms were merely such as may be observed in a moderately severe case in which the diagnosis of meningotyphoid could not be made. The author also believes, however, that an acute serous meningitis is very common in typhoid fever, and he explains by this one of the most striking signs of the disease: the relative infrequence of the pulse. In all the author's cases puncture was followed by subsidence of headache, which, in some of the cases, was permanent.

Acute Leukæmia in Childhood, with Report of a Case.—McCRAE (*Johns Hopkins Hospital Bulletin*, May, 1900, p. 102) reports an interesting case of acute leukæmia in a child, the history of which is summarized as follows: "Male, aged three years; anæmia; fever; purpuric rash; blood picture of leukæmia; hemorrhages; convulsions; death; duration about one month."

The child was admitted to the Johns Hopkins Hospital on May 11, 1898. He had been fretful for a few days previous to admission. It was found that he had adenoids and enlarged tonsils. The liver was palpable 3 cm. below the costal margin. The spleen was palpable and hard, but did not extend below the costal margin. There was no general glandular enlargement. Over the sacrum there was an extensive purpuric, almost gangrenous, area. The blood examination on May 12th gave the following: Red cells, 1,680,000; leucocytes, 26,000, and hæmoglobin, 35 per cent. (v. Fleischl). A differential count of the leucocytes showed 86.5 per cent. of lymphocytes (small, 41.5; large, 45 per cent.). On May 24th, the day the child was removed from the hospital, the blood examination showed the following: Leucocytes, 21,800 per c.mm., with 98.6 per cent. of large and small lymphocytes. On May 19th the leucocytes had been 60,800 per c.mm., with 99.2 per cent. of lymphocytes. The child died on May 30th, six days after removal from the hospital. Death was preceded by epistaxis, petechiæ, and convulsions.

According to McCrae, acute leukæmia is a rare disease in the first decade, but a search of the literature shows that there are at least thirteen previously reported cases of acute leukæmia in this period of life.

Of these 13 cases 11 were in males. Fever was noted in 8 cases; general glandular enlargement was present in 4 cases, enlarged cervical glands only in 5 cases, no enlargement in 2, and no note regarding it in 2. The spleen was enlarged in all the cases. There was enlargement of the liver in 8 cases, none in 3, and in 2 the condition was not noted.

The red cells were reduced in the eight cases in which there was a record of a count being made. They ranged between 2,350,000, the highest, and 1,000,000, the lowest.

The leucocytes showed wide variation. There were counts in eight cases, the highest being 209,000 and the lowest 21,000 (McCrae's case).

The type of leukæmia was apparently lymphatic in thirteen cases, and in the remaining case no note regarding the blood is given.

As to diagnosis the disease can be recognized only by careful blood-examination. The conditions with which it is most likely to be confounded are: (1) An acute infection with specially marked throat symptoms, and (2) a hemorrhagic purpura. A possible relationship to lymphatism or a "lymphatic constitution" must also be considered. Ewing, who has also studied this relationship, thinks that there is no connection beween the two conditions.

The treatment is largely symptomatic. In no case does any treatment appear to have been of service.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

JOHN RHEA BARTON PROFESSOR OF SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE UNIVERSITY HOSPITAL,

AND

F. D. PATTERSON, M.D.,

SURGEON TO THE DISPENSARY OF ST. AGNES' HOSPITAL, ASSISTANT SURGEON TO THE DISPENSARY, UNIVERSITY HOSPITAL.

Psychical Disturbances during Acute Osteomyelitis.—STEIN (*Prager medicinische Wochenschrift*, August 16, 1900) states that out of thirty-one cases (twenty-one males, ten females) of acute osteomyelitis that have come under his observation since 1892, three (two males, one female, all children) were accompanied by psychical disturbances. Similar disturbances of mentality may also follow malaria, acute muscular rheumatism, pneumonia, typhoid fever, or any of the acute infectious fevers. They may appear at any time during the course of the disease, and may be the result of the absorption of toxins or may indicate that the patient is not receiving the proper amount of nourishment. They are pure psychoses, and may take the form either of mania or of melancholia. Case I. Boy, aged sixteen years, who presented all the typical symptoms of acute osteomyelitis of the tibia accompanied by marked delirium. At the beginning of the third week of the disease he was somewhat better, but he soon became very violent, refused all food, tore off his dressings, and passed all his evacuations in bed. He screamed and cried the greater part of the time, and whenever his nurse left his bedside he seemed to be nearly consumed with fear. At no time could he make an intelligent answer to a question. He became fearfully emaciated, but after several relapses he slowly improved. An examination

showed the knee- and ankle-joints to be full of pus, which necessitated an amputation through the thigh above the knee. He made a good recovery, and was discharged from the hospital twelve weeks after the date of his admission. Case II. was a girl, aged fourteen years, who had acute osteomyelitis of the right tibia. She presented all the typical symptoms. A free incision to secure drainage was made over the infected area. Soon afterward she showed the symptoms of an infection of the right forearm, both wrists, and at the angle of the elbow. It was necessary to incise these in two places, and also to make another incision for drainage in the affected leg. She was markedly delirious, and there were delusions of vision and hearing She declared that her room was full of people of frightful appearance, with whom she held almost constant conversation in a most excited manner. She seemed to be in constant fear. She became extremely unclean in her habits, and fought violently on any attempt being made to clean her. Finally, it became necessary to remove her to a room by herself, where she became quiet, and melancholy succeeded the mania. She spoke but little, and spent most of the time in weeping. She asked to be placed in the room with the other patients again, but as soon as she was returned to it she became as violent as before. Finally, however, she slowly began to improve, and was quite well when discharged from the hospital eleven weeks from the date of her admission. Case III. was a boy, aged sixteen years, poorly nourished, whose delusions took the form of acute melancholia accompanied by great uncleanliness; the latter was really the most prominent symptom. He shrieked whenever anyone approached the bedside, and refused all nourishment. Examination showed the patellar reflexes to be exaggerated and ankle clonus marked. Shortly after this his parents removed him from the hospital, and the case was then lost sight of.

Mechanical Antisepsis in the Treatment of Gonorrhœa.—Kiss (*Centralblatt für die Krankheiten der Harn und Sexual-Organe*, Band xi., Heft 7) states that medicated solutions introduced into the urethra clean the same mechanically, after which they exert their chemical action on the mucous membrane. This latter effect is important, but there are many ways of showing that the mechanical washing plays the principal rôle in the cure of gonorrhœa. The copious injection of sterile water every two hours will in from twenty-four to forty-eight hours almost entirely stop the discharge and cause the disappearance of the gonococci. If this treatment is stopped the discharge reappears in twenty-four to forty-eight hours—proof that the mechanical antisepsis is an important factor. Similar results follow irrigation with ordinary pure water, which must be used copiously in order to obtain a lasting benefit. This treatment proved most efficacious in a light case of sixteen days' duration, but in three other cases of fresh infection it was inefficacious. The irrigations were given every four hours for one week, and then once daily for one week in the successful case, which was then cured. Twelve cases in the hospital were given a copious anterior irrigation once a day, and every two or three hours the patients gave themselves one or more injections, lasting five to ten minutes. All the cases improved; seven remained under observation long enough to note the permanent disappearance of the gonococci. It is not possible to speak positively of the permanent cure of

cases of gonorrhœa which were under observation for so short a time, but it is clearly demonstrated that the mechanical washing of the anterior urethra is beneficial. It is necessary to use chemical agents in order to be able to produce thorough mechanical antisepsis, but, as is well known, not all antiseptics are germicidal to the gonococcus, while some that are the most fatal to the gonococcus are so irritating to the urethral mucous membrane as to make their use an impossibility. It is possible theoretically to compose a solution that will destroy them, but it is often impossible to reach those gonococci inhabiting the depths of the follicles, etc. Argentamin and protargol have been found to be very effective, but both are highly irritating. Better results have been obtained by the use of copious irrigations with a mild permanganate of potassium solution, which is not irritating, and enables one to obtain much more thorough mechanical antisepsis as well as a germicidal action, and a healing influence on the urethral mucous membrane. After a few anterior irrigations the discharge markedly lessens and the gonococci disappear. After irrigations with a 1 : 2000 or 1 : 4000 solution of silver nitrate the gonococci disappear from the secretion—this is partly due to the mechanical washing, but it is also due to the precipitate from the solution in the urethra which mechanically hinders for a time the appearance of the gonococci. It is not possible to state what part the astringents will play in the treatment of the future. The appearance of complications can in many cases not be prevented by any form of treatment, but it may be said that they are rarer in those cases treated by the application of medicated solutions. Out of 1200 cases complications appeared in 221 before the beginning of treatment. During the treatment only twenty-six cases developed complications (twenty-two were cases of epididymitis), despite the fact that only one-third of the cases were treated with "good" solutions. It was not possible to tell which solution was the best in preventing complications, but it was shown that the best method of treatment of gonorrhœa is that one in which simple mechanical antisepsis can be the more thoroughly accomplished.

The Restoration of Motion after Ankylosis of the Joints.—CHLUMSKY (*Centralblatt für Chirurgie*, September 15, 1900) states that the treatment of the simple ankylosis produces but moderate benefit. Out of fourteen cases of non-tubercular ankylosis treated in the last ten years in the Breslau Surgical Clinic there was not a single case in which there was any marked improvement. Ankylosis consists in either a shrivelling of the soft parts or a bony overgrowth, or, more commonly, both of these are combined in a single case. The contracted soft parts can be loosened through massage and by forced movements, but the bony ankylosis cannot be affected except by such violent force as will cause an intracapsular hemorrhage, and in the end the patient's condition is really worse than it was in the beginning, for the ankylosis recurs in a very short time. After forcible breaking up of the adhesions in a case of ankylosis the tendency is for the condition to recur soon unless some means are taken to prevent reorganization of the tissues in a faulty position. The best example of the introduction of a foreign body as a means of preventing bony union is seen in those cases of fracture where a small piece of muscle or fascia gets between the fragments

and causes ununited fracture. If one could imitate or counterfeit these occurrences it might be possible to produce movement in the ankylosed joint. An attempt has been made to do this in cases of ankylosis of the jaws. After resection some of the masseter fascia was introduced into the joint with fairly satisfactory results in three cases. This method is not possible in the larger joints, because the ultimate destiny of the interposed fragment may be fatal to the further function of the joint, and, secondly, the carrying out of this method presents various technical difficulties. So the author reports his experiments with animals (dogs and rabbits), at first introducing a plate made of either celluloid, silver, tin, rubber, or gauze after a resection of the joint. These results were very good, as was shown by exposing the joints at times varying from three weeks to four and one-half months after the operation. The joints contained serous fluid, the ends of the bones where the cartilage had been partially resected were covered with a thin surface of cartilage, while the bones which had been resected through the bone itself presented a smooth surface covered with connective tissue. The capsule of the joint and the ligaments were somewhat thickened. The rubber or celluloid plates lay undisturbed in position, while those that were made of tin or silver were found to be pulverized. The gauze was found somewhat wrinkled in one case. Two of the dogs died of sepsis. The results, on the whole, were good, but it was apparent that the use of plates made of non-absorbable material might in time lead to serious consequences. It would, therefore, seem best in using this method on mankind either to remove the plate after a few weeks, or, what is even better, to use plates made of absorbent material, such as decalcified bone, ivory, or magnesia. The last is the best, as it can be more surely and easily sterilized, and the time of its absorption accurately computed by the thickness of the plate used. The experiments made on rabbits with this substance were most satisfactory, and as a result it is plain that in this difficult field there is now new hope of ultimate good results by this method of treatment.

Cocainization of the Spinal Canal.—DUMONT (*Correspondenz-Blatt. f. Schweizer Aerzte*, October, 1900) states that he has used this method of producing anæsthesia in three cases, all of which were followed by such painful consequences that he does not recommend the procedure as now practised. Death resulted in one case, but the cocaine was only an indirect factor, for the patient was in a very weakened condition as the result of some years of illness, and the cocainization only served to hasten the end. General anæsthesia would undoubtedly have given much better results than cocaine did in the three cases. It may here be emphasized that general anæsthesia, carefully given, gives very much better results in the senile diseases than any other method. This method has also been used by physicians as a remedial measure. Thus Jaboulay injected a solution of cocaine and morphine into the spinal canal of a case of myelitis in an effort to relieve a contraction of the leg due to that disease. This was followed immediately by the legs becoming entirely "asleep," and in the succeeding eight days the patient suffered from retention of urine, etc. The same author also reports a case in which he injected the same fluid between the meninges in a patient subject to epilepsy. The result was the production of a convulsion. One cannot be

too careful to avoid such a disaster. Gumprecht has emphasized the fact that even simple lumbar puncture is not without danger. He reports seventeen fatal cases, two of which occurred in his own practice. In conclusion, it may be said that cocainization of the spinal canal is an original and interesting method of inducing anæsthesia, but there is little probability at the present time of its supplanting the usual methods of inducing general anæsthesia.

Discussion on the Present Condition of Pleuropulmonary Surgery.—DEPAGE (*Annales de la Société Belge de Chirurgie*, June, 1900) opened the discussion by stating that theoretically it is admissible that after the performance of simple thoracentesis or pleurotomy a case of acute purulent pleurisy may recover with physiological re-establishment of the pleura, but in cases of chronic empyema the conditions are different. Here the pleuræ are permanently modified in shape, physiological restitution is not possible, and recovery is attained by adhesion of the visceral with the parietal portions of the pleurisy. Thoracentesis, pleurotomy—the operations of Schede and Estlander—have here each their indications, but not one of them is sufficient for those cases of chronic pleurisy with the lung completely retracted in the costo-vertebral space. When the lung is found in a condition of complete atelectasis the best operation is to resect the clavicle and the first rib. The operation proposed by Delorme may prove successful, but it is to be remembered that the effects of this method still remain to be studied, and that the pulpification of the lung tissue will not permit this organ to expand.

DESQUIN states that he has but rarely seen the necessity to have recourse to such grave operative procedures as the methods of Schede, Estlander, and Delorme. He believes in careful drainage in all cases of purulent pleurisy, shortening the drainage-tube each day, and in from five to six weeks a cure should result; very rarely it may result in a shorter time. In children a purulent pleurisy may be cured by a single aspiration. As a rule, these cases are the result of an infection by the pneumococcus, and this is the most favorable type. He reports one case of radical cure by this method of treatment, which is an argument in favor of not completely rejecting it. He believes lavage to have its uses, and has employed a solution of chloride of zinc with good results. When the patient has a rise in temperature he employs irrigation, which is usually followed by a drop in the fever. In two different cases he has seen pneumothorax caused by the opening of the thoracic cavity. He has then maintained a sterile sponge over the thoracic opening, thus preventing the air from rapidly entering that cavity. He has found this precaution sufficient; in no case were there alarming symptoms, and as soon as the pleural cavity was closed the air was rapidly absorbed.

GALLET states that in those cases of chronic pleurisy which are the result of an acute purulent pleurisy there are three operations to which the surgeon may have recourse. The operation of Estlander gives good and durable results in the ordinary cases, but in those in which the lung is driven back into the costo-vertebral space either Schede's operation or that of Delorme is the one of choice. He is not a strong partisan of lavage, but believes in the curettage of the purulent cavity, using the blunt curette of Rheinstätter. He believes in drainage continued over a long space of time.

WILLEMS states that he believes that the traumatism resulting from the operation proposed by Depage to be beyond the powers of resistance of the patient, who is usually much weakened by the duration of the suppuration. He states that it would be more simple to resect the posterior segment of the inferior ribs and thus expose the costo-vertebral space and drain the pleural cavity. He believes that most cases of empyema are operated on too late, and that the earlier they are operated on the sooner they recover. He does not believe in performing an exploratory puncture, which often fails to show the presence of pus, but instead depends for his diagnosis upon the usual pathognomonic symptoms of deep-seated suppuration: fever, emaciation, and sweats, which he considers to be the most important symptoms. He does not believe in attempting to evacuate the pus by puncture, which accomplishes nothing more than the loss of valuable time, as the case will eventually demand thoracotomy, which is best done early. He believes it best to open the pleura through the intercostal space after resecting a segment of a rib from 3 to 5 cm. long. This best facilitates digital exploration and drainage. He states that cases of pleurotomy recover faster without irrigation than they do when it is used. He reserves lavage for those cases where fever persists and for those where the pus has undergone decomposition, which is often shown by the odor and by the pus becoming green in color. In these cases the use of hydrogen peroxide is usually attended with marked success. After the first irrigation the pus loses its odor, the green color disappears, and there is a marked diminution in the quantity. Estlander's operation is indicated in those cases where there is prolonged suppuration with permanent retraction of the lung against the vertebral column, where there is no chance of the lung again becoming functional, and where there is scoliosis. He reports two cases in which Estlander's operation was successfully performed.

DEPAGE states that Estlander's operation is indicated in those cases where the purulent cavity is of small dimensions, but that both Schede's and Estlander's operation do not cause the disappearance of the void which always exists in these cases at the top of the pleural cavity.

VERNEUIL states that when the lung is completely retracted the best operation is that of Schede, as has been demonstrated by the radiograph in the case cited by Gallet.

DEPAGE states that the radiograph may not be absolutely depended upon, as there is always some trouble in interpreting the plate in this type of cases.

VERNEUIL states that it is possible in all cases for new adhesions to exist between the two layers of the parietal pleura and so make the plate obscure.

DESQUIN states that it is questionable if lavage is a wise method of treatment in all cases. In some it is very useful and gives excellent results. It is also questionable if simple puncture cures many cases of purulent pleurisy in children.

BLONDEZ reports one case where a single puncture cured a purulent pleurisy in a child. When a physician is practising in the country, among a more or less uneducated class of people, the parents of a child with purulent pleurisy will permit a simple puncture when they would not permit a pleurotomy, so in some cases this treatment is the result of circumstances.

DEPAGE states that it is an interesting question whether or not it is possible

for a patient with acute pleurisy to recover with a complete re-establishment of the pleural cavity and without any trace of the disease.

VERNEUIL, in closing, stated that theoretically such may be the case. Lavage is indicated in certain cases, while in others it is not. Curettage is also a valuable adjunct to the treatment when indicated. It is rare that simple puncture cures the purulent pleurisy of children; usually it only causes the loss of valuable time, and the case finally demands a pleurotomy for its relief. Pleurotomy is not a more grave operation than puncture; the final result of the case depends upon the nature of the pleurisy and the powers of resistance of the patient. In a vigorous patient who has a pleurisy as the result of an infection with the pneumococcus, pleurotomy gives the best chance for recovery. The fact that a man lives in the country should not be used as a reason in favor of a line of treatment which has no other reasons to recommend it. If pleurotomy is the operation of choice it should be performed, and no unscientific considerations should modify the surgeon's judgment; but even if puncture is abandoned in the treatment of purulent pleurisy, it still has its place as an aid to diagnosis. The appearance of scoliosis after pleurotomy is usually late, and before it occurs further operative interference, such as Estlander's operation, should be performed. It is not wise to wait until the vertebral deviation has occurred. A secondary and more radical operation is early indicated if the pleurotomy has not been successful. The dangers of total pneumothorax have been greatly exaggerated, as has also been noted by Desquin. Verneuil states that he has never seen a case in which this has happened.

On the Surgical Treatment of Aneurisms by Excision.—ANNANDALE (*The Scottish Medical and Surgical Journal*, October, 1900) states that the excision method of treatment has the following advantages: (1) If the operation can be successfully performed the result is a complete cure of the aneurism. (2) The ligatures have the advantage of being applied to the ends of the divided vessels, and not to them in their continuity. (3) Even if the corresponding vein be divided and a portion of it removed the risk of gangrene is not great. (4) That in this method all the advantages of the antiseptic treatment can be obtained in connection with the successful healing of the wound and closure of the vessels where divided. (5) Inflammation and suppuration of the sac or rupture of it cannot occur in connection with this method. (6) Although as yet more experience is required, it seems likely that certain aneurisms, such as subclavian, will in the future be treated more successfully by this method.

The author believes that in the near future the treatment of all aneurisms of the limbs, whether "spontaneous," "traumatic," or "arterio-venous," provided they be tolerably circumscribed and free from complication, will be most effectively carried out by excision; and that aneurisms of a diffuse nature, owing to rupture of the sac or from other causes, will be best treated by laying open the sac and ligating the vessel at its point of communication, either by an incision through the walls of the sac or by exposing and ligating the vessels immediately outside the sac. When possible it is no doubt advisable to excise the sac or as much of it as can be safely dissected out; but if the sac is very adherent to the surrounding tissues it is best not to interfere with it, but to be content with securing the communicating vessels.

PEDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,
OF PHILADELPHIA,

AND

THOMPSON S. WESTCOTT, M.D.,
OF PHILADELPHIA.

A Study of 1778 Cases of Diphtheria.—RICHARDIÈRE reported to the International Medical Congress (*Revue mensuelle des Maladies de l'Enfance*, August and September, 1900, p. 407) a series of 1778 cases of diphtheria cared for at the Hôpital Trousseau, the diagnosis having been confirmed in every case by bacteriological examination.

Of the total number 280 died, a gross mortality of 15.7 per cent. Excluding from the statistics the cases that were fatal after less than twenty-four hours' sojourn in the hospital, which received practically no treatment, the deaths were reduced to 205, a mortality of only 11.5 per cent. Thanks to serotherapy, the prognosis of diphtheria, when operation upon the larynx is not required, has become almost benign. Thus of 1115 cases without operation there were 61 deaths, a mortality of only 5.5. On the other hand, the mortality of croup requiring operation remains high—27 per cent.

The treatment consisted of injections of Roux's serum (10 c.c. up to one year; 15 c.c. from one to two years; 20 c.c. above two years). Locally, lavage of the pharynx was made with solutions of permanganate of calcium, 1 to 4000. In the simple cases lavage and all internal treatment were withheld. There were no grave accidents imputable to the serum.

Eruptions occurred in 198 cases and followed five different types, pure or combined, namely, scarlatiniform, urticarial, roseolic, purpuric, erythematous, and polymorphous. The time of appearance after injection of serum varied from two to fifteen days. They were accompanied by elevation of temperature of from 1° to 1½°, and almost constantly by a fetid diarrhœa of short duration. Articular complications appeared in fifteen cases, most often arthralgic only, exceptionally inflammatory. The two principal causes of death were toxicity and bronchopneumonia. Primary toxicity seemed to be rebellious to all treatment; secondary toxicity could be prevented by early employment of the serum. Cardiac failure was treated satisfactorily by sulphate of sparteine and by injections of artificial serum in massive doses. Bronchopneumonia was the most frequent cause of death. Intubation was rarely a cause, but in intubated cases the cause of death was most frequently the diphtheric infection complicated by a secondary infection. The treatment of the bronchopneumonia is unsatisfactory. In three series of cases treated respectively by cold baths, warm baths, or without bathing the percentages of mortality were about equal.

The complications most frequently observed were suppurative sub-maxil-

lary adenitis and otitis. Other complicating conditions noted were : abscess of the mediastinum, œdema of the glottis, gangrene of the larynx, endocarditis, cerebro-spinal meningitis, pleurisy, icterus, eclampsia, and nephritis. There were fifty-one cases of paralysis, most frequently localized to the uvula, rarely generalized. In two cases the paralysis, of hemiplegic type, was due to a lesion of the brain.

Diphtheria complicating other infections was particularly grave. In twenty-five tuberculous cases the mortality was 21.

Bacteriologically the long bacillus was found in one-quarter of the cases, and the medium and short in the other three-quarters. Streptococci were observed almost constantly in the cultures, whence the author concludes that the simultaneous presence of diphtheria bacilli and streptococci is without prognostic significance.

A Lymphatic Anæmia Met with in Children.—ALEXANDER MACGREGOR (*The Lancet*, September 29, 1900, p. 931) calls attention to a form of anæmia which he believes has not been hitherto described, and which in his experience is not uncommon in children, but is never met in the adult.

The signs and symptoms are so characteristic that it cannot be mistaken for any other form of anæmia or affection of the lymphatics. Of twenty-three cases of which notes have been preserved the ages ranged from three to sixteen years, and eighteen of these patients were between three and eleven years of age; nineteen were boys and four girls. In no case was there a history of an acute stage or sudden onset. The disease runs a very chronic course, and recovery is the rule. The history of the cases shows that the glandular affection is in no way connected with those enlarged glands which usually become (or are from the first) tuberculous, and the characteristic adenitis and the chronic course distinguish it from glandular fever. The anæmia may or may not be very marked; the adenitis is always marked, but it is easily overlooked, because none of the glands are large enough to attract the eye. The glands are small and hard, and they are always numerous in the cervical triangles and in the groins. The axillary glands are never affected. That the bronchial glands are frequently, if not always, enlarged one may safely infer from the fact that cough is in many cases a troublesome symptom when there is nothing in the lungs to cause it. The mesenteric glands are probably also affected, but abdominal symptoms are rare. The spleen is distinctly increased in size in a large proportion of cases. Catarrhal pneumonia of one or both bases is not uncommon; in one case there was pleural effusion, and in another well-marked signs of thickened pleura.

The blood shows a decrease of the red and a large increase of the white corpuscles, and of the latter the increase of the large uninucleated corpuscles is very striking. The lymphocytes form from 12 to 13 per cent., the large uninucleated from 20 to 39 per cent., the multinucleated from 41 to 63 per cent., and the eosinophiles from 2 to nearly 7 per cent. The increase of the large uninucleated corpuscles from 6 (normally) to 39 per cent. is thus seen to be very marked. In two cases the multinucleated and the large uninucleated corpuscles were present in practically equal numbers, and very few small lymphocytes were seen.

There is always a history of gradually failing health, listlessness and fatigue, loss of flesh, and anæmia. Cough is frequently troublesome, and is usually worse at night. Appetite is poor, but the tongue is clean, and the bowels constipated.

Arsenic and iron are naturally suggested, and, with cod-liver oil, produce satisfactory results. Improvement is slow in all cases, and the glandular enlargements gradually disappear. In none of the cases observed has local or general tuberculosis resulted. The cough is a troublesome symptom and yields slowly to the treatment.

Morphine Poisoning in an Infant Successfully Treated with Potassium Permanganate.—JOHN A. BARKER (*New York Lancet*, July, 1900) reports a case of poisoning in an infant four days old, which had been given one-fourth of a grain of morphine by mistake. The infant was found in stupor, cyanotic, with cold skin, dilated and insensible pupils, slow stertorous breathing, and a pulse so feeble that it could not be counted. Two grains of permanganate were given by hypodermatic injection, heat was applied to the surface, and artificial respiration performed. A few minutes after this violent convulsions began, and although breathing was imperceptible, a second hypodermatic injection of the permanganate was given and the Schultze method of artificial respiration was continued. After about five minutes breathing was noticed and the pulse could be felt. Coma continued for half an hour, and a third dose of permanganate was given. Improvement rapidly ensued, and recovery was complete.

The Diagnostic Importance of the Meningococcus Intracellularis.—LOUIS FISCHER (*Pediatrics*, October 15, 1900, p. 290) calls attention to the fact that the toxin of the meningococcus of Weichselbaum is distinctly less virulent than that of the streptococcus, pneumococcus, bacterium coli, or the influenza bacillus. Many cases of epidemic cerebro-spinal meningitis recover, even though the disease assumes a purulent character, while the meningitis resulting from otitis media always terminates fatally, and almost an equal fatality attends sporadic meningitis of purulent type due to one or other of the organisms mentioned. An important point to remember in differentiating the epidemic form from the sporadic form is that the duration of the epidemic is always very lengthy, lasting weeks and frequently months; the sporadic type ends fatally in about four or five days.

Heubner lays great stress upon the value of lumbar puncture in the epidemic form of cerebro-spinal meningitis. Heretofore the only means of distinguishing the purulent form from the tuberculous during life has been by the character of the fluid aspirated from the spinal canal. The bacteriological examination, however, is conclusive, and is easily made. A pure culture is obtained by inoculating the surface of agar with the aspirated fluid. It grows very rapidly, yielding a yellowish growth, shining and having a slime-like character. A smear from the pure culture is then taken and stained with Ziehl's solution.

The author quotes from Councilman, who states that an examination of the spinal fluid should be made in every case; he believes that "all infections of the meninges other than that by the diplococcus cellularis are fatal,

but this can be determined only by microscopical and bacteriological examination of the exudation obtained during life by spinal puncture. If tubercle bacilli, pneumococci, or streptococci are found with the evidence of meningitis in a case which recovers it would settle the point."

The Cure of Hernia in Early Infancy without Operation.—TAILLENS (*Revue Médicale de la Suisse Romande*, August 20, 1900, p. 423) bases a study under this caption upon the results observed in the non-operative treatment of hernia in infants under two years of age in 81 cases in the Out-patient Department of the University of Lausanne. Of this number 53 had inguinal herniæ and 28 umbilical, divided as to sex between 58 males and 23 females. The preponderance of males followed the law observed in adult life, which is conditioned by the greater frequency of inguinal herniæ among male patients.

Of the 53 inguinal herniæ 34 were on the right side and 19 on the left. At both extremes of life the right side thus seems to be more susceptible to inguinal hernia than the left, and since in infancy it is not possible to attribute this preponderance to the violence of efforts made with the members of the right side, the cause must be sought in other conditions, probably embryologic or hereditary, exercising their influence at all epochs of life. Perhaps the fact that the right testicle descends after the left has some importance in this regard, since the closure of the peritoneo-vaginal canal at birth or shortly after would thus be less firm than on the opposite side.

Among the exciting causes phimosis is especially mentioned, being noted 28 times among the 58 herniæ in boys—a proportion of 48 per cent. The phimosis need not be complete; when it is the percentage is very much higher, as has been pointed out by Schmidt, Berger, and Broca. The action of phimosis is evidently explained by the secondary dysuria depending upon mechanical obstruction or irritation of the prepuce and glans produced by retention of smegma mixed with urine.

Despite the disadvantages attending an out-patient service among the children of the poor, the author reports 67 of his 81 cases cured by use of the bandage; of the 14 cases not cured 9 were subsequently operated upon, and 5 remained in the same condition. The cases tabulated were first seen between 1893 and the end of 1897, and all were re-examined about the end of 1899, a period varying from two years for the later cases to seven years for the earlier cases. Six of the cases, 5 of inguinal and 1 of umbilical hernia, obtained spontaneous cure without any form of treatment. In the cured cases the bandage was worn from a period of one day to one month in 6 instances, from one to two months in 8, from four to six months in 11, and more than six months in 14. Failure in the uncured cases was attributed, first, to neglect of the parents, and, secondly, to the unfavorable character of certain herniæ in early life, either because of their great size or owing to complicating circumstances, such as diseases causing frequent cough, a bad state of nutrition, or defective formation of the inguinal canal.

In patients under one year of age the strong pressure produced by the spring truss cannot be used; in these cases the rubber bandage with an air-pad is available. Ordinarily the double bandage gives better results, even when one size only is affected. For infants over a year old the spring truss

may be employed when it is well borne. For umbilical hernia the usual dressing of a compress retained by a band of adhesive plaster generally suffices; or, if this fails, an elastic bandage of rubber should be used.

The Value of Koplik's Spots in the Diagnosis of Measles.—Further testimony to the diagnostic value of Koplik's spots is offered by the recent Yale thesis of WILLIAM J. MARONEY (*Yale Medical Journal*, October, 1900, p. 133), who reports a study of 140 cases of measles observed at the New York Foundling Hospital. In 53 cases the spots were noted at the beginning of the eruption, a large majority of these patients having been examined for the first time after the appearance of the eruption. In 51 cases the spots were observed twenty-four hours before the appearance of the eruption; slight fever, ranging from 99° to 101° F., was present in all, and slight coryza and conjunctivitis in 35. In 20 cases the spots were seen forty-eight hours before eruption, and slight fever but no coryza was noted; while in 4 cases they were detected three days and in 2 cases four days before the rash, slight fever being noticeable, without catarrhal symptoms. Spots without eruption were observed in two very delicate children, but the patients undoubtedly had measles and died in a few days without development of the rash. No spots were observed in 8 cases, in 4 of which the children were marantic, with very dry mouths.

The author points out that some elevation of temperature was observed in all cases showing the spots, and he considers this condition as almost necessary for positive diagnosis. Another fact to which attention is drawn for the first time, is that the spots are seldom recognized in the mouths of marantic children; which is ascribed to the dry condition of the mouth in such cases, or to the fact that these children do not react well to the infection.

[Dr. Maroney's experience adds further convincing testimony to that already adduced in reviewing the observations of recent Continental writers in abstracts published in this department in the issue of December, 1900. —ED.]

Pathological Alterations of the Gastro-intestinal Mucosa in Primary Atrophy.—FEDE, of Naples, in a communication to the Thirteenth International Medical Congress (*Revue mensuelle des Maladies de l' Enfance*, August and September, 1900, p. 400) reports a study of the anatomo-pathological changes artificially produced in the digestive tract of puppies rendered atrophic by different diets. He is thus led to distinguish in the human infant a primary athrepsia produced by insufficient, bad, irregular, or premature feeding from a secondary athrepsia caused by tuberculosis or other profound alterations of the digestive apparatus, by hereditary syphilis, and also by divers cachectic maladies.

Five series of experiments were made with different diets so as to produce an atrophy comparable to that seen in young infants. The gastro-intestinal alterations were then studied.

In the five series the results obtained were constantly the same, and, as compared with the organs of normal animals, showed thinning of the gastro-intestinal walls and an atrophy of the tissues with diminution of the cellular protoplasm.

The researches confirm the position held by the author for several years, namely, that in infantile atrophy or the athrepsia of Parrot there is encountered only thinning, and sometimes a catarrhal process of the intestinal canal, but never destruction of glands or villi. In the cases in which these destructions have been found by various observers, and most recently by Cornélia de Lange, the condition is a secondary atrophy, and not primary. In a certain number of cases it is probable that the lesions which have been described are produced by cadaveric putrefaction.

Suppurative Meningitis Due to the Bacterium Lactis Aerogenes.—SCHEIH (*Prager medicinische Wochenschrift*, 1900, No. 15) publishes an interesting observation of an infant dying at the age of eight days with symptoms only of congenital debility, a diagnosis that was all the more reasonable since the child was one of twins. At the autopsy was found a purulent infiltration of the pia and bilateral suppurative otitis with fibrinous false membrane in the left ear. The mucosa of the nose and of the cavities of the face was found to be normal, and no disease was observable in the lungs or other organs.

The bacteriological examination of the pus of the meninges and of the ears, as well as that of the nasal mucus, showed the existence of a bacillus which was identified as the bacillus lactis aerogenes. Inoculations made upon white mice and rabbits showed that the organism was excessively virulent for these animals.

The bacillus lactis aerogenes, discovered by Escherich, was considered by this observer a normal habitant of the intestine like the coli bacillus. Later Czerny and Moser found it in the blood of nurslings affected with fatal gastro-enteritis. It has also been observed in certain cases of cystitis and pyelonephritis.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD WEBB WILCOX, M.D., LL.D.,

PROFESSOR OF MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL,

AND

SMITH ELY JELLIFFE, M.D., PH.D.,

PROFESSOR OF PHARMACOGNOSY AT THE COLLEGE OF PHARMACY; CLINICAL ASSISTANT AT THE VANDERBILT CLINIC (COLUMBIA UNIVERSITY), NEW YORK.

Nectrianine.—MM. MONGOUR and GENTES have made use, by subcutaneous injection, of the soluble products of *Nectria ditissima*—the parasitic fungus of tree-cancer. Four patients in the last stages of cancer—uterus and vagina, uterus, epithelioma of the tongue, and tumor of the bladder—have been under observation. The conclusions are: (1) That the injections are without danger. 2. They do not arrest the evolution of the neoplasm.

3. They do not prevent formation of metastatic tumors or modify the glandular lesions. 4. In all cases the disease follows its normal course to final cachexia. 5. The stoppage of the injections corresponds in a certain number of cases with a subacute evolution of cancerous processes. 6. With the majority of patients the injections suppress or diminish the hemorrhages and fetid discharges, and they are especially valuable for the relief of pain, being even superior to morphine.—*Le Bulletin Médicale*, 1900, No. 56, p. 651.

The Specific Treatment of Croupous Pneumonia.—Dr. Willson O. Bridges would rely upon guaiacol or salicylates, giving preference to the former when the disease is past the stage of congestion in the enfeebled or when there exist heart lesions. The addition of strychnine to the salicylate treatment obviates in part the depressant effect upon the heart, and so does alcohol. Strychnine is also combined with guaiacol for its influence upon the nervous system and to prepare patients for large doses, should these be necessary. Venesection is advised if the right heart be overloaded and threatening symptoms arise; digitalis is reserved for an irregular and flagging heart; codeine in small doses for the relief of pain and delirium; calomel and a saline for constipation or sluggish portal circulation; oxygen gas is commenced at the first sign of cyanosis and administered in quantity sufficient to relieve. The absolute recumbent position must be maintained until resolution is established.—*Journal of the American Medical Association* 1900, vol. xxxv., p. 74.

The Use of Drugs in Tuberculosis.—Dr. Theodore Potter states that at the present time we fasten our hopes and our reliance upon creosote. Formerly his practice was to administer rather large does—twenty to forty drops—but at present one-half of this is considered sufficient. It is best administered in capsules, to be filled by the patient at the time of taking. A little milk taken just before them will make them easier to swallow and will, in a large measure, prevent the disagreeable burning sensation should any of the medicine come in contact with the mucous membrane of the mouth or œsophagus. Often the patient is directed to take a glass of milk, or even two, while taking the capsule. Clinical experience shows that the judicious administration of this drug is frequently followed by an increased appetite and digestion, and with this comes improved nutrition, increase of strength, increased resisting power, retardation of the local disease, and usually diminution of the secondary symptoms and lesions resulting therefrom. Guaiacol has been used chiefly as an external application.—*Journal of Tuberculosis*, 1900, vol. ii., p. 224.

The Silver-injection Treatment of Pulmonary Consumption.—Dr. Thomas J. Mays has for nearly ten years injected silver nitrate over the vagi of the neck, with a view of producing counter-irritation over these nerves and thereby enhance the resisting power of the lungs. Five minims of a 2.5 per cent. solution of silver nitrate injected at a point immediately over or slightly behind the pulsating carotid in the region of the neck, preceded by a similar dose of cocaine hydrochlorate through the same needle, will produce the requisite degree of irritation. The skin is lifted between

the thumb and the forefinger of the left hand and the needle just pushed through the skin. The local visible effects show themselves in nodular (sometimes in diffuse) swelling, and in redness and pain, but these are not marked. Most of the injections should be made on that side of the neck below which the affected lung is situated, and should be repeated about once in a week or ten days. The results obtained in more than one hundred and fifty instances showed that the injections greatly, and sometimes entirely, relieve the cough and expectoration in a very short time; that they check vomiting, improve the appetite, increase the general strength, ameliorate the physical signs, suppress the fever, abate night-sweats, and in some patients produce a striking increase of weight. The best effects are found in incipient and moderately advanced disease, although they are not without benefit in far-advanced cases. The theory of this method is based on the observed facts: (1) That agents and measures which give the best results are those which influence the nervous system, and (2) every influence or agent which has the power of undermining the integrity of the nervous system has also the power of generating pulmonary consumption or some other form of pulmonary disease.—*The Virginia Medical Semi-Monthly*, 1900, No. 6, p. 190.

[Although this method, in conjunction with others, is capable of benefiting patients suffering from chronic pulmonary disease, it is not likely that the premises will be accepted as they are here presented.—R. W. W.]

Treatment of Whooping-cough by Injections of Gomenol Oil.—Dott. Aldo Tozzi reviews the literature. This substance is a terpinol derived from the *Melaleuca viridiflora*, and in a 20 per cent. solution is injected deeply into the gluteal region, commencing with a small dose (thirty minims) and not exceeding two drachms. The injections are but slightly painful; it is rapidly absorbed and does not produce reaction under antiseptic precautions. Its primary action is sedative, and after a short time the number and severity of the paroxysms diminish; the vomiting ceases after the third or fourth injection. The secondary bronchitis and cough are equally benefited, but persist for ten to fifteen days after the cure. The appetite, weight, and strength are increased. The injections should be made every day and continued for four or five days after the entire disappearance of the paroxysms.—*La Riforma Medica*, 1900, No. 156, p. 70.

Demorphinization by Means of Heroin.—M. G. Kandel, in reporting a successful instance of this method, expresses his astonishment that a relatively small dose, even half a grain, cannot only diminish, but even prevent, the suffering which follows the cutting off of morphine. In rapid withdrawal of morphine this substitute is efficacious. It is certainly preferable to the method of Erlenmeyer, in that in place of diminishing quantities of morphine this drug is substituted, and the patient thus escapes the suffering. With this the inconveniences of morphine, it is claimed by some authors, are avoided; but here skepticism may be indulged in. However, habituation and influences upon the digestive and sexual organs are certainly less.—*Nouveaux Remèdes*, 1900, No. 13, p. 294.

Duboisine in Mental Diseases.—Dr. G. Lalaune concludes that this substance, as the sulphate, (1) when administered by the mouth produces

hardly appreciable effects; but to produce results it is necessary to give doses which may not be without danger. (2) It is necessary to be sure that the preparation in unchanged; colored glass is essential to prevent chemical change. (3) It acts as a sedative for physical agitation, but not for intellectual excitation; the former is promptly and durably influenced. (4) The daily dose should not exceed one-fortieth of a grain, and the patient should be watched until all danger of poisoning is passed. (5) The remedy should not be used unless there is at hand a solution of pilocarpine nitrate or hydrochlorate, which will facilitate its elimination should symptoms of poisoning arise.—*Journal de Médecine de Bordeaux*, 1900, No. 23, p. 413.

Treatment of Epilepsy.—Dr. David Inglis states that when epileptic patients are seen early they should receive sufficient bromide to control the attacks readily, and it is very advantageous to combine with it at the outset a moderate amount of chloral. The bromide then should be gradually diminished to the smallest dose which will keep down the convulsions. If, in spite of the careful and persistent use of the bromide, the fits continue, then recourse should be had to acetanilide, of which for an adult five grains three times a day is an ample dose. Not infrequently three grains at the same interval will be found sufficient, and even this amount may be gradually diminished. Further, it seems to be of importance that the patient should be set at bodily labor of a vigorous sort and sufficient in amount to bring about the complete oxidation of his food-products, and to stimulate in nature's own way all of the excretions. The diet should be restricted; not an exclusive vegetable diet, but meat and eggs are the kinds of food of which epileptics ought to eat very little, if any.—*The Physician and Surgeon*, 1900, vol. xxii., p. 327.

The Antagonism between Cocaine and Hypnotics.—Dott. Gioffredi has observed that with small but not fatal doses of cocaine and chloral hydrate there is a complete and reciprocal antagonism in the sense that one drug neutralizes the action of the other, but this cannot be said of large and fatal doses. But in considering fatal doses there is a unilateral antagonism in that chloral hydrate and other hypnotics are able to compensate for and neutralize fatal doses of cocaine, but the reverse is not true. This antagonism is shown in the nervous, vascular, and respiratory systems and temperature effects, but in large doses the action of the hypnotics always prevails.—*Rivista Critica de Clinica Medica*, 1900, No. 5, p. 117.

Orexin Tannate in Anorexia.—Dr. T. W. P. Smithwick announces that this is the best remedy for anorexia occurring in children, on account of its easy administration. For adults six grains should be given one hour before each meal; for children the dose should be decreased according to age. When administered to convalescents it increases the appetite, aids digestion and assimilation. In all cases—even of tuberculosis—the body-weight increases. The length of time required for treatment is variable, depending upon the individual characteristics of the patient and the origin of the trouble. In simple atonic dyspepsia it was not necessary to continue it longer than three weeks; in anæmia four to six weeks; in phthisis (four patients)

two were treated for six weeks each, and now two months have elapsed and they are doing well, while in the others the disease was further advanced and they are still under treatment, gaining about one pound in weight each week.—*Merck's Archives*, 1900, No. 3, p. 88.

Carrasquilla's Serum Treatment of Epilepsy.—Mr Frank Tidswell was engaged for nine months in testing this method. Two patients were treated patiently, perseveringly, and continuously during this period, but not the slightest improvement was noted; but, on the contrary, the disease continued to progress in both patients. The report closes with the citations from current literature showing that others have failed, and their results have been of a uniformly discouraging nature.—*Intercolonial Medical Journal of Australasia*, 1900, vol. v., p. 233.

Peronin.—Dott. Ferdinando Battistini finds that while this substance resembles codeine in its absence of hypnotic effect and in large doses giving rise to convulsions of bulbo-cerebral origin, on the other hand, it acts in a quarter of the dose of the latter, and should be considered as a heart-poison. It diminishes cough by lessening the sensibility of the bronchial mucous membrane. Locally it is anæsthetic (rabbits) in 1 per cent. solution when instilled into the conjunctival sac, and does not produce cloudiness of the cornea, but in man it produces abundant lachrymation, marked conjunctival injection, and chemosis. In daily doses of about a grain it produces regular and deep sleep in paralytics during the period of excitation, and even can be classed with paraldehyde, chloral, and morphine in intensity of action. Its untoward effects have received much attention; danger to the heart, profuse sweating, intense headache, itching, nausea, dryness of the throat may result, and in general various forms of malnutrition, as catarrhal and tuberculous affections of the larynx, bronchitis, and pulmonary diseases are contraindications to its use. The ordinary dose is about double that of morphine, the maximum daily amount being two and one-half grains.—*Rivista Critica di Clinica Medica*, 1900, No. 4, p. 103.

Pathology of Lobar Pneumonia as a Basis for Treatment.—Dr. J. K. Crook believes that in the near future we may have an antipneumotoxic serum to combat inflammations of the lung due to the pneumococcus. At present results are not satisfactory, and the older expectant methods of treatment are advised. The writer considers *seriatim*: 1. Calomel. Large doses, twenty to sixty grains, may be given at the outset of the disease to render the exudate derived from the blood unfit for sustaining microbic life. Of thirty grains administered perhaps five enter the blood as a soluble albuminate. Here a still smaller quantity is converted to the perchloride—more than a third of a grain cannot be tolerated. It is known that the mercurial solution quickly disappears, for it is soon found in the urine, bile, etc. The antiseptic is in a very attenuated form when it comes in contact with the micro-organisms. Whether it still possesses power as a germicide is an open question. 2. Quinine. Within six hours half of the exhibited dose is eliminated by the urine. It is a powerful antiseptic, and it has been shown that a 1 per cent. solution is fatal to the diplococcus pneumoniæ in five minutes.

As to its influence on the microbe in man, whether it disqualifies the blood for suppiying a culture for the organisms, or whether it acts directly as a germicide, nothing is known. 3. Salicylic acid. Mention is made of recent exceedingly favorable reports (Schering, Liegel); the writer has found only a slight lowering of the temperature and increased expectoration. There was no influence over the usual course of the disease. There are no researches to show that the salicylates exert any influence on the pneumococcus in the living body. 4. Chloroform is useful for its sedation of the nervous system and its anticoagulating influence on the blood. Given by inhalation its fumes are brought into close contact with the pneumococci when used early, before the small bronchi are blocked by exudate. Its effect on the germs is also unknown. 5. Creosote is largely excreted by the lungs, and is thus brought into direct contact with the bacteria; there are no data concerning its action on the germs, and the same is true of carbolic acid. Conclusions are: Recognition of a pathogenic microbe increases the hope that an efficient antitoxin may be discovered. The use of antiseptics for the destruction of pathogenic organisms in the tissues is very limited. Pneumonia is a self-limited disease with a tendency to recovery if the patient can be kept alive for a few days. While new germicidal remedies may be tried, they should not as yet supersede an intelligent form of expectant treatment, which results in a far lower mortality than attempts to abort the disease.—*Medicine*, 1900, No. 4, p. 277.

A Comparative Study of Digitalis and its Derivatives.—Dr. John P. Arnold and Horatio C. Wood, Jr., have made a careful review of the literature and performed some laboratory experiments, from which they draw the following conclusions: (1) Digitalin and digitoxin each represent the full circulatory power of digitalis. (2) Digitalis, digitalin, and digitoxin stimulate the cardio-inhibitory mechanism, both centrally and peripherally; in larger doses they paralyze the intrinsic cardio-inhibitory apparatus. (3) They all cause a rise of blood-pressure by stimulating the heart and constricting the bloodvessels. (4) Very large doses paralyze the heart muscle of the mammal, the organ stopping in diastole. (5) Digitoxin is not to be recommended for human medication on account of its irritant action, which makes it liable to upset the stomach when given by the mouth, or to cause abscesses when given hypodermatically, and, on account of its insolubility, which renders it slowly absorbable and irregularly eliminated, having a marked tendency to cumulative action. (6) Digitalin of a particular manufacturer has been found to be a stable compound, one grain being equivalent to about one and one-fifth drachms of tincture of digitalis.—*Merck's Archives*, 1900, No. 9, p. 351.

Thyroid Extract in Psoriasis.—Dr. Leonard Weber reports that a nervous young woman, with uric-acid and rheumatic symptoms, received one five-grain tablet of this substance thrice daily for two months; at the end of this time all the areas of eruption (some fifty or more) had disappeared. The only local treatment was the application of a 25 per cent. aristol ointment. Four months after stopping the remedy no relapse had occurred.—*The Post-Graduate*, 1900, No. 9, p. 1103.

Sarcoma of the Nasopharynx Cured by Injections of Formalin.—Dr. John A. Thompson reports that the nasopharynx of his patient was filled with a red tumor which was attached to the posterior wall. Microscopical examination of a detached portion showed it to be a round-celled sarcoma. Twenty-five minims of a one-half of 1 per cent. solution of formalin were injected into the tumor twice each week. Six weeks later, the mass having become less vascular, part of it was removed by post-nasal forceps; later, the remainder was removed after further injections. Six months later there was no return of the growth.—*The Laryngoscope*, 1900, vol. ix., p. 193.

Treatment of Malignant Pustule with the Serum of Sclavo.—Dott. Adolfo Liscia reports two successful instances of the use of this serum. In both the improvement was rapid after a dose of from two to ten drachms. —*Gazetta degli Ospedali e delle Cliniche*, 1900, No. 87, p. 898.

Treatment of Uræmic Intoxication.—Dott. A. Cominelli notes that there is a marked distinction to be made between the acute and chronic forms, and that the latter is to be considered as an intoxication. With sodium salicylate given hypodermatically in doses of from five to six grains a notable rise of temperature occurs and the uræmic phenomena disappear. —*Gazetta degli Ospedali e delle Cliniche*, 1900, No. 69, p. 733.

Hæmaturia.—Dr. Schwabe reports a single instance of the successful use of gelatin. A solution of 2 per cent. of gelatin in physiological salt solution was heated to 212° F. and allowed to cool. About six drachms, at body temperature, were injected, with antiseptic precautions, under the right and left clavicles. For the next eight days the patient took *per os* a pint of a 10 per cent. gelatin solution. Hemorrhage began to diminish immediately after this injection and practically ceased five days later, although three days more were required for its entire disappearance.—*Therapeutische Monatshefte*, 1900, Heft 6, S. 311.

Toxicology of Potassium Chlorate.—Dr. S. J. Meltzer analyzes the existing experimental data and reports some new facts. From these he concludes that this substance is a strong poison for the nerve cells, which are at first intensely excited and then paralyzed by it. May we not also assume that by introducing this poison into the circulation a certain amount of it reaches the brain, especially the respiratory centre, in a concentration sufficient to excite and paralyze it? Although we must admit that the solution injected into the brain contained a greater percentage of the salt than the blood of the animal poisoned by it ever contains, we must also admit that the circulation reaches the cells of the respiratory centre in a far more intimate way than can be accomplished by our crude methods of simply injecting into the brain, where, according to Bruns, the liquid mostly remains on the surfaces of the ventricles.—*Therapeutic Gazette*, 1900, No. 7, p. 433.

[This paper is useful, because it throws additional light upon the causes of various symptoms; still more evidence is required before the complete toxicology is understood.—R. W. W.]

Marked Poisoning from Five Grains of Quinine.—Dr. Franklin W. Bock reports that a patient received five one-grain quinine pills, one to be taken every hour. In three hours there was a very marked roaring in the ears, and deafness followed, with intense headache and grippy pains in the bones. Two days later extensive erythema of the face followed, somewhat resembling erysipelas, and, later, symptoms of collapse appeared. At times there was muttering deiirium. Convalescence was slow, and at the end of four weeks it was found that the patient's hearing was reduced about one-half.—*Merck's Archives*, 1900, No. 8, p. 315.

An Improved Method of Using Gelatin in Hemorrhage.—Dott. F. S. Racchi believes that ten drachms of a warm 2 per cent. solution of gelatin in normal serum injected into the rectum is more rapidly absorbed than if given hypodermatically. Its action is manifest in from five to ten minutes and lasts about six hours.—*Gazetta degli Ospedali e delle Cliniche*, 1900, No. 114, p. 1199.

Ichthoform.—Dr. Hugo Goldman reports upon this remedy, which is a combination of ichthyol and formaldehyde. This occurs as a dark-brown powder, smelling and tasting of ichthyol, completely insoluble in water, hardly soluble in ether and chloroform, and forming an emulsion with glycerin. It inhibits the development of the colon bacterium, typhoid bacillus, and staphylococcus pyogenes aureus. Internally, as an antibacterial, antifermentative, and deodorizing remedy in various disorders of the alimentary tract, its use has been successful. Generally as much as can be placed upon the point of a knife with an equal quantity of sodium bicarbonate taken after meals, three times daily, has been sufficient. Even in intestinal tuberculosis it is beneficial. It is apparently a safe remedy, inasmuch as it has no effect upon the nervous system and does not irritate the kidneys. The amount of indican excreted in the urine is sensibly decreased. The results of its use in external wounds demonstrates its antiseptic properties.—*Centralblatt für die gesammte Therapie*, 1900, Heft 9, S. 513.

The Treatment of Whooping-cough.—Dr. J. W. Wiltee recommends quinine as an acidulated solution. An application to the glottis, following Moncorvo, of a one-third of 1 per cent. solution of resorcin every four hours during the day, and when possible once or twice during the night, is often useful. The original method called for the application of a 10 per cent. solution of cocaine previous to the use of resorcin, but this should be omitted, because it often gives rise to spasm of the glottis (Roskam).—*Albany Medical Annales*, 1900, vol. xxi., p. 535.

The Continuous Use of Digitalis.—Dr. J. Grœdel believes that there is no more difficult question to determine than the advisability or non-advisability of permitting digitalis to be taken for a considerable period without interruption. Many years' practice of the giving of digitalis uninterruptedly has very often resulted in great benefit. In the majority of heart diseases there comes a time when we can no longer succeed in producing lasting compensation by means of repose and dietetic rules, baths, and gymnastics, or

even by a short course of medicine. At ever-decreasing intervals we must have recourse to the various acknowledged remedies, and, above all, to digitalis. Some patients lead a comfortable and endurable life for only a few days after the completion of the digitalis course; then it quickly passes off, and we are obliged again to resort to digitalis, eventually combined with other drugs, to save life. By thus giving digitalis intermittingly, and if possible anticipating these periods of heart weakness, the patient may be kept in a comfortable condition. Sometimes the interval between these periods may be lengthened by replacing this drug by continuous doses of other heart remedies, as strophanthus or caffeine. Should these fail, the continuous digitalis treatment should be instituted. Objections to this plan are cited as follows: (1) Cumulative effects. Of these the author admits the existence, but states that he has only rarely seen instances of violent toxic symptoms resulting from cumulative effects, which, however, never lasted long and did no permanent harm. These can be guarded against by omitting the remedy, or avoiding the danger by observing the diuresis and stopping the remedy so soon as there is a marked diminution in the amount of urine. (2) A continuous use of digitalis is said to produce a rapid decline in strength, wasting, and destruction of tissue. This is emphatically contradicted by the author. (3) The body becomes inured to the remedy, which gradually loses its effect. This is believed to be erroneous. Nor, indeed, can the digitalis habit be formed. As to the forms of cardiac disease in which this method may be recommended, mitral insufficiency is first mentioned. In heart diseases the result of overexertion, when small doses cease to have a satisfactory effect, a slight increase may be advantageous. If this fails some other remedy should be substituted, and on returning to digitalis large doses may now prove efficient. In the last stage only of arterio-sclerosis, when the high vascular tension has passed away, the small, continuous doses may be decidedly useful. In conclusion, when physical and dietetic means of treatment fail, recourse is had to digitalis, using it with care, very sparingly, and at as long intervals as is possible. When this method becomes a comparative failure the continuous digitalis treatment is resorted to, which, when all other treatment was useless, has produced in many cases a satisfactory result.—*The Practitioner*, 1900, No. 382, p. 380.

Formalin in Ophthalmology.—Dr. Edward S. Lander prefers the solution of the strength of one to two thousand. This is very useful in mucopurulent and follicular inflammation of the conjunctiva. For purulent conjunctivitis (ophthalmia neonatorum) a stronger solution may be used at first until the discharge begins to decrease in amount. In blennorrhœa of the lachrymal sac formalin is more satisfactory than silver nitrate. For infected ulcerations or abrasions of the cornea the wound may be touched once daily with a solution as strong as one to five hundred or even two hundred. All solutions of a strength under one to four thousand cause smarting, but this is less intense and of shorter duration than that caused by silver nitrate. In a solution of one to two or three thousand it is used to disinfect the skin of the lids and eye-lashes prior to operation; for clearing the conjunctiva one to four thousand is preferable.—*Cleveland Medical Gazette*, 1900, vol. xv., p. 619.

Digitalis in Heart Disease.—Dr. R. C. Peacocke accepts the prevailing view that the drug acts on the heart through its effect on the muscular tissue, only slightly influencing the vagus nerve. Each muscle fibre becomes more elastic, extending more completely, and increasing its contractility, hence both diastole and systole are more deliberate, and the latter more forcible (Schmiedeberg). Threatened heart failure, due to inefficient ventricular systole, demands digitalis, and this holds true whether the condition be primary or secondary to some acute process, as, for example, pneumonia. Beneficial effects of digitalis are best observed in mitral disease, with small, frequent, irregular pulse, and cardiac dropsy. In dilated and flabby (fatty) heart, with soft and intermittent pulse, such as is often seen in the aged, digitalis is excellent. Smaller doses suffice; five to fifteen minims of the tincture twice or thrice weekly may be given for several months continuously. In uncomplicated aortic stenosis the writer advocates its use (?). Where there is either double aortic disease it is generally indicated, though there are instances of sudden syncope following. Moderate prolongation of diastole may give time for regurgitation of sufficient blood into the ventricle to cause increased embarrassment or even fatal over-distention. When in doubt, the pulse is the best guide; if it be between 60 and 70 beats, digitalis is contraindicated. Arterial spasm (increased tension?), even when a water-hammer pulse exists, also contraindicates digitalis. Clinically, there are very many instances in which, despite theoretical objections, digitalis is beneficial in aortic regurgitation. It is advisable, first, to try the effect of nitroglycerin. In flabby heart, due to alcoholism, digitalis acts well both as a cardiac tonic and also by counteracting the effects of other sedatives required by the alcoholic state.—*The Dublin Journal*, 1900, No. 340, p. 256.

The Alleged Cholagogue Action of Methyl-violet.—Dott. A. G. Barbéra records his observations made upon dogs with complete and permanent biliary fistula, this substance being administered by the mouth. His conclusions are: (1) It is eliminated in part in the bile; (2) it diminishes the quantity and solids of the bile produced by the liver; (3) it changes the color of the bile from a pale to a deep violet.—*La Riforma Medica*, 1900, No. 85, p. 115.

Thiocol.—Dr. John Mair, after reviewing the literature upon the use of tar and its derivatives in pulmonary phthisis, records his results after the use of potassium ortho-guaiacol-sulphonate in nine instances. This substance is free from taste and odor, and is readily soluble in water. About 70 per cent. is absorbed when two drachms daily are given. It is non-irritant and non-toxic, even causing no burning sensation in the mouth or throat. It relieves the anorexia, fever, emaciation, night-sweats, decline of strength, and vitality common in this disease more quickly and certainly than any other drug. It may be administered as a plain powder or given in tablet, capsule, or cachet, or disguised in orange syrup. It is rapidly excreted, the sulphur appearing as a sulphonade in the urine, and a small portion as guaiacol sulphonade. Since all the patients were treated in a poor neighborhood, with very unhygienic surroundings, and the improvement was marked, it is concluded that the remedy was a great benefit.—*The Therapist*, 1900, No. 4, p. 87.

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE; PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC; CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE; VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

Ectopic Gestation.—At a recent meeting of the Obstetrical Society of London, DORAN (*British Medical Journal*, 1900, p. 1535) reported the case of a woman in her fifth pregnancy, who suffered from abdominal pain and diarrhœa. Labor came on, and was followed by septic symptoms. The outline of the fœtus could be plainly felt through the abdominal wall. As the case was found to be ectopic, the fœtus was removed by abdominal section sometime after its death. The sac was packed with gauze, and the placenta came away in fragments. A fecal fistula followed, and discharged a few weeks. For six weeks the patient felt well, when symptoms of chronic obstruction of the bowel with great emaciation set in, and she died. It was found that several coils of the small intestine had been dragged upon by traction of the sac. The adhesions involved several surfaces of mesentery which seemed to account for the emaciation. As the fœtus had developed in the posterior layer of the right broad ligament, there was no true sac inferiorly, and complete extirpation of the sac seemed hardly possible.

In discussion, Cullingworth suggested that irrigation of such a sac was not the best method of treatment. He feared by this means the carrying of septic matter to other structures. He believed that diarrhœa in this case was not only due to irritation of the intestine by the placenta, but also to septic absorption. Spontaneous closure of a fecal fistula may always be expected when the fistula is not tubercular or malignant. Malcolm had seen the patient before and during the operation, and drew attention to her extreme emaciation and debility. A putrid cavity and much sloughing of placental tissue had been the reason for washing out the sac so frequently. The symptoms preceding death were not those of obstruction of the bowels, although this condition actually existed. Boxall had twice seen a fecal fistula heal when the patient was in bad condition from a suppurating dermoid tumor. He suggested the use of a rubber bag which could be distended so as to make pressure upon the wall of the sac.

The Set of the Pelvis in the Body.—BARBOUR recently read a paper upon this subject before the Edinburgh Obstetrical Society (*British Medical Journal*, 1900, p. 1537). In antero-posterior curvature there is a marked inclination of the brim which affects the set of the pelvis in the body. He showed a drawing of a pelvis in a woman who had never walked, and its high promontory and almost vertical brim were very noticeable. We know that the direction of the brim varies greatly in different patients who may be

considered to be normal. The position of the promontory can be described by taking the distance which it stands back from the upper margin of the symphysis and the distance above the symphysis. The significance of the position of the brim is in its influence upon the engagement of the head and the expulsive force of the uterus. It becomes more important in multiparæ than in primiparæ.

It is also important to study the relation of the abdominal axis to the pelvic axis; this has not heretofore been done. The inclination of the brim should be described as a perpendicular let fall from the upper margin of the symphsis on a line passing through the promontory in the long axis of the abdomen. The advantage of this method is that a fixed line within the body is taken instead of an imaginary plane without the body. The angle of divergence of the plane of the brim from this perpendicular is necessarily the same as an angle of divergence of the axis of the brim from the long axis of the abdomen. The smaller this angle the more does the long axis of the abdomen come into line with the pelvic outlet. The range of divergence in pelves obstetrically normal is considerable, varying from forty to sixty degrees. While an average of fifty-five degrees may be taken, it is important to know that pelves vary from this within certain limits. To apply these studies he would use a diagram including the lumbar portion of the spine, representing it in the dorsal posture, and referring the inclination of the brim to a perpendicular let fall in the long axis of the abdomen, which is practically the horizontal plane passing through the pelvis. The inclination of the brim should be marked not only by a line representing the mean, but also by a maximum and minimum inclination for pelves obstetrically normal.

Total Extirpation of the Ruptured Uterus Through the Vagina.—In the *Centralblatt für Gynäkologie*, 1900, No. 26, IWANOW reports the case of a patient in her first pregnancy who suffered from bronchitis. The fœtus was in transverse position, the arm prolapsed. The patient was in charge of a midwife, who vigorously massaged the abdomen when the pains, which were strong, occurred. Later the patient experienced sharp pains in the lower portion of the abdomen, with hemorrhage and shock. On the following day she was admitted to the hospital.

On examination the entire cervix was found to be torn away, and the under portion of the body of the child was lying upon the left side. The placenta was in the vagina, the fœtus in the abdomen, and the uterus had contracted. The child was extracted with difficulty by traction upon the foot, and the uterus was removed through the vagina. A mass of blood-clot and meconium was found in Douglas' cul-de-sac. A tampon of sterile gauze was applied. The patient made a gradual recovery complicated by suppuration in the pelvic tissue, which had been infected during labor.

Extraction of a Living Child After the Mother's Death.—KIRCH (*Centralblatt für Gynäkologie*, 1900, No. 25) reports the case of a patient who had suffered from rheumatism and had mitral disease of the heart with failing compensation. On arriving at the house it was found that a child had been born, while the mother was lying in collapse, with threatened death from

heart failure. Breathing and action of the heart had ceased. From the vulva protruded the foot of a second child, which was rapidly extracted and seemed dead. It was resuscitated and lived for a short time, finally perishing. It was learned upon questioning that the mother had been suddenly roused by a sensation of pain and smothering, after which the first child had been rapidly expelled, and that the delivery of the second child must have taken place nineteen minutes after the death of the mother. In spite of this delay the second child was resuscitated and lived for several hours.

Complete Rupture of the Uterus.—HALBAN (*Centralblatt für Gynäkologie*, 1900, p. 655) reports the case of a patient in her second labor whose pains suddenly ceased, and this was followed by hemorrhage from the uterus. A midwife examined the patient and found a prolapse of the umbilical cord. On examination the patient was found to be rhachitic, while the tissue, which was supposed to be the umbilical cord, was found to consist of the posterior lip of the cervix uteri, which had been almost torn from its attachment. A deep tear in the uterus was found penetrating the abdominal cavity.

Abdominal section was performed, and the child was found entirely outside the uterus within the abdominal cavity. The womb had been torn across its anterior wall as high as the position of a distended bladder. The uterus was completely removed with its appendages, and vaginal drainage was practised. The patient made an excellent recovery.

It is interesting to note that in this case rupture of the uterus occurred two hours after the bursting of the bag of waters. The posterior lip of the womb was cut and pressed against the promontory of the sacrum, partly tearing it away and thinning the abdominal wall above. The fœtus was for fourteen hours in the abdominal cavity, although it seemed to have occasioned no irritation of the peritoneum and no infection.

In discussion, Schauta drew attention to the very important fact that the fate of these patients is often decided by those who examine them before they are brought to a hospital. If they become infected they are usually lost. In discussion, attention was called to the good results obtained by abdominal section as compared with drainage through the vulva by gauze. A further trial of extirpation of the ruptured uterus by the vagina was also urged.

Syncytioma Malignum and Ectopic Gestation Causing Pernicious Nausea.—In the *American Journal of Obstetrics*, July, 1900, p. 1, DAVIS and HARRIS published a paper under the above title. The first case described was that of an ectopic gestation in the right tube in that portion of the tube passing through the uterine wall. Rupture had occurred, and bleeding was taking place into the abdominal cavity. Vaginal examination was negative, but severe symptoms of shock were present. Up to the time when rupture occurred it was impossible to diagnosticate pregnancy, although the patient suffered from severe and persistent nausea. Pregnancy was denied by the patient, and no physical sign was present. The patient was operated upon and made an uninterrupted recovery.

The second case was that of a multipara whose labors had been spontaneous. She had missed her menstruation for nearly two months, and had

pernicious nausea. She was of robust physique and had previously been very strong. She was transferred to hospital and the uterus emptied under ether. The nausea ceased, but the patient did not regain strength, had paroxysmal attacks of vomiting, became almost maniacal, and passed feces and urine involuntarily. Her one prominent symptom was severe headache not localized. Her pupils were unaltered, and there seemed to be no interference with the function of the cranial nerves. She died of exhaustion.

Upon autopsy syncytial tumors were found in the brain, the lungs, the kidneys, and the liver. The uterus and pelvic organs were normal. Microscopical study showed the tumors to be typical and afforded abundant opportunity for studying the development of this interesting growth.

[This case is remarkable for the absence of pathological conditions in the uterus. It resembles the case recorded by Schmorl in which the womb was normal, but syncytial tumors were present in the kidneys, lungs, liver, and intestine of a woman who had died as the result of the general involvement of the viscera by the new growths. The gross appearance of the tumors was essentially that of sarcomata, but microscopical examination made the diagnosis certain. —ED.]

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D.,

OF NEW YORK.

Formol in the Treatment of Uterine Hemorrhage.—GERSTENBERG (*Centralblatt für Gynäkologie*, 1900, No. 34) reports a series of cases treated with intra-uterine applications of a 40 per cent. solution of formaldehyde. He recommends this treatment especially in cases of climacteric hemorrhage and in those of unknown origin.

In hemorrhage after abortion, where curettement is not practicable, good results were obtained after three applications. When disease of the adnexa is the etiological factor this treatment can only be expected to effect a symptomatic cure.

No bad result followed the applications. The technique is simple. The solution is applied on cotton wrapped around an applicator, strict aseptic precautions being observed. Patients should be kept in bed for a couple of days if possible.

Operations on the Large Intestine by the Vaginal Route.—LIERMANN (*Beiträge zur klin. Chirurgie*, Band XXV., Heft 1) describes the following method practised by Rehn: After tamponing the rectum the posterior vaginal wall is incised from the portio to the fourchette, and the flaps are dissected off, if necessary, as far as the ischiorectal fossa and tubera ischii. The rectum is then separated down to the sphincter, the muscle being spared if possible. The diseased portion is removed and the upper end is brought

down and sutured to the anal ring. When Douglas' pouch is opened the peritoneal wound is usually closed, although the progress of the case is equally satisfactory if it is left open. The bowels are moved on the third or fourth day. In the cases observed there was no more reaction than after an ordinary vaginal section.

The writer states that by this method it was found to be possible to resect a portion of the colon and to fix the distal end in the anal ring. It is recommended in cases of neoplasms, prolapse of the gut, and strictures situated high up.

Carbide of Calcium in Cancer of the Uterus.—GROUZDEY (*La Gynécologie*, 1900, No. 4) adds his testimony as to the value of this preparation in cases of incurable carcinoma. He applies it to the diseased area in gauze bags, protecting the vagina with tampons. He finds that healthy granulations are formed, the foul discharges and hemorrhages are arrested, while pain is relieved and the general condition is much improved.

The good effects persist for a week, when a fresh application should be made. He has observed no ill results, but adds the caution that the surface of the vagina should be thoroughly dried before the carbide is introduced.

The writer has also obtained good results in treating in a similar manner benign erosion and ulcerations of the portio vaginalis.

Œdema of the Bladder in Stricture of the Urethra.—KOLISCHER (*Centralblatt für Gynäkologie*, 1900, No. 17) calls attention to changes in the vesical mucosa in cases of congenital stricture of the female urethra. These strictures appear through the endoscope as whitish, shining projections, more or less circular. The mucosa at the urethral orifice is œdematous, the œdema involving the vesical mucous membrane over a considerable area. Actual loss of substance may result, so that small ulcers are formed with elevated borders. The symptoms caused by this condition are frequent and painful micturition and tenesmus, while the urine often contains pus and blood.

All treatment is useless until the stricture has been divided, after which applications of iodoform are recommended.

Prolapse of the Urethral Mucous Membrane.—VOILLEMIN (*Thèse de Paris;* abstract in *La Gynécologie*, 1900, No. 4) attributes this condition to unusual laxity of the submucous layer of cellular tissue. Prolapse is most often observed in very young girls and in women after the climacteric, seldom in women during active sexual life. Among the common causes are dilatation of the urethra, senile involution, and violent straining (from constipation, cough, etc.), though urethritis and traumatism are occasional etiological factors. The early symptoms—painful and difficult micturition—are succeeded by constant pain, dyspareunia, and inability to take any exercise, hemorrhage, and even complete obstruction to the flow of urine. As the prolapse becomes more marked, ulceration occurs, and the bleeding may be profuse.

Excision with the galvano-caustic wire is recommended, or, better, removal of the prolapsed portion and suture of the edges.

Total Extirpation of the Uterus for Complete Procidentia.—Fronip (*Münchener med. Wochenschrift*, 1900, No. 10) reports six cases operated upon by Martin's method. Five patients were examined at various intervals after operation. Although they had performed severe manual labor, no instance of recurrence of the cystocele and rectocele was observed.

The writer refers to Freund's method of retroverting the uterus through an opening in the posterior vaginal fornix and suturing it to the anterior vaginal wall, but thinks that it is only applicable to cases in which the organ is large. When it is atrophied or diseased total extirpation is preferable.

Ultimate Results of Abdominal Myomectomy.—Burckhard (*Zeitschrift für Geb. u. Gynäkologie*, Band xliii., Heft 1) summarizes his views on this subject as follows: Unless removal of the cervix is indicated by actual disease or the necessity of drainage there need be no fear of retaining it because of the liability to subsequent malignant degeneration. With few exceptions the ultimate result of hysterectomy for fibroids is good; such reflex disturbances as follow the operation are seldom profound. After castration hemorrhages may be expected to cease, provided that every trace of ovarian tissue has been removed, and in most cases the tumor diminishes in size. Menstrual molimina seldom persist after the removal of both ovaries, but are more common when one or both ovaries are removed, whether the uterus is left or not. Increased nervous irritability is not common, especially if the ovaries have been preserved. Grave psychological disturbances were never observed by the author. He concludes that it is always better to preserve the adnexæ if they are healthy.

Physiological Relations Between the Uterus and Adnexa.—Roubinstein (abstract of thesis in *La Gynécologie*, February 15, 1900) conducted a series of experiments in rabbits and dogs with a view to determining the effect upon the uterus of removal of the ovaries alone, the tubes being preserved. It was found in the majority of cases that removal of one ovary was followed by marked compensatory hypertrophy of the remaining one. Microscopically a decided increase in the number of Graafian follicles and corpora lutea was observed. No anatomical changes in the uterus resulted from extirpation of one ovary, but after removal of both the endometrium invariably became atrophied, including the surface epithelium and glands, and general proliferation of the connective tissue and atrophy of the muscular fibres occurred. When transplanted or left free within the peritoneal cavity the ovaries sometimes atrophied, sometimes preserved their functional activity, the uterus maintaining its normal anatomical structure, or the reverse, according to the condition of the ovaries.

The writer concluded that removal of the uterus alone was not followed by any anatomical or physiological changes in the ovaries, while the tubes were also not affected.

Resection of the normal ovaries was followed by complete restoration of tissues and glandular elements, without the formation of true cicatricial tissue, while no alterations were noted in the uterus and tubes.

[It should be borne in mind that the conditions present in aseptic operations upon healthy animals are essentially different from those encountered by the abdominal surgeon. It is one thing to resect normal non-adherent ovaries, and another to excise macroscopically diseased portions of these organs after separating adhesions which naturally tend to re-form. Hence the prognosis as to subsequent atrophy of the ovaries after conservative operations must always be doubtful.—H. C. C.]

Results of Implantation of the Uterus in Treatment of Fistulæ and Procidentia.—FREUND (*La Gynécologie*, February 15, 1900) reports the remote results of operations for the repair of complicated genital fistulæ and procidentia, in which the uterus was retroverted into the vagina and the cervix sutured in the wound. In young women menstruation appeared for a few times and then ceased entirely, the uterus undergoing atrophy. No incontinence of urine or feces was noted. The patients were permanently cured, so that they could perform the most severe labor. Coitus became impossible except in one instance. The indications for the operation, as stated by the author, are: 1. Extensive loss of tissue, complicating vaginal fistulæ. 2. Complete procidentia, of unusual degree, in women after the climacteric. In any case it is assumed that the uterus must have lost its functional activity.

Subcutaneous Injection of Iron in Amenorrhœa.—HENROTAY (*La Gynécologie*, February 15, 1899) recommends hypodermoclysis in cases of amenorrhœa in young girls due to anæmia. He introduces from eight to ten ounces of a solution of the pyrophosphate of iron (fifteen grains to the pint) beneath the breast. If the injection is too painful the glycero-phosphate may be substituted.

Two cases are reported, in one of which the menses returned after the fourth injection and continued regularly after eight had been given. The other patient, who had taken large quantities of iron without results, menstruated normally after she had been treated for eight days. The writer was unable to explain whether the prompt result was due to the fluid alone or to the iron. It was noted that soon after each injection a general feeling of prostration was felt, which persisted until the following day.

Chronic Rheumatism from a Gynecological Stand-point.—STEINBÜCHEL (*Ibid.*) analyzes 1000 cases with a view to the differential diagnosis between rheumatic pain and those due to pelvic affections. He finds in women of all ages nodules of different sizes most frequently in the ileo-sacral region, accompanied by pains which closely simulate those due to pelvic inflammatory conditions.

These nodules, which are characteristic of rheumatism, are due not only to contractions and serous infiltrations of the muscles, but they may develop primarily in the fascia, muscle-sheaths, and attachments of tendons, and by the resulting pressure may cause an irritable state of the muscle.

The prognosis with expectant treatment is unfavorable, but a cure can nearly always be effected by massage, baths, and active and passive movements.

OTOLOGY.

UNDER THE CHARGE OF
CHARLES H. BURNETT, A.M., M.D.,
AURAL SURGEON, PRESBYTERIAN HOSPITAL, ETC., PHILADELPHIA.

Otitis Media in all Grave Diseases of Infancy.—E. H. POMEROY (*Boston Medical and Surgical Journal*, January 18, 1900) has written a most important article with the above title. He says at the outset: "My idea is that most of the diseases of infancy are more positively, more comprehensively, more demonstrably infectious from definite bacterial infection than we can easily prove in adults, or if toxæmia from bacterial growth, also more definite; and that the pharyngeal post-nasal chamber is the more easily comprehensible distributing point for infection to the middle ear, the brain, the lung, the stomach, the intestines; and the middle ear as incubator and generator promoting general toxic disturbance in very many cases of localized infectious diseases."

He has been impressed by Ponfick's tables (*Berliner klinische Wochenschrift*, September and October, 1897) "of 100 consecutive autopsies of infants under three years of age, with special reference to the conditions of the ears therein." These autopsies were divided into two groups, viz., non-infectious and infectious processes. In most of these cases the condition of the middle ear or ears preceding death was not suspected. In the non-infectious group were found two of congenital heart disease, one of extensive burns, and three of non-infectious dermatitis. Of these only one was found free from otitis. This was an infant of five and a half months with congenital heart disease. "Although this disease would appear to have the least possible connection with otitis, yet the only other case of congenital heart disease in this group was a one-year-old child showing otitis media in both ears," both drum cavities being filled with pus.

The second group, that of infectious processes, embraces 94 per cent. of all cases collected. This is subdivided into two classes: (*a*) acute and (*b*) chronic. Under sub-group *a* we are informed that in four cases of infectious dermatitis —*i. e.*, furuncles and erysipelas—not one was free from purulent otitis media. In a second group are six cases of diphtheria, with three free from otitis media. Naturally, we might expect more aural lesions in this group, but the comparative freedom from ear suppurations in this group is due to the fact that "the local inflammation (in diphtheria) is so early and so intense near the pharyngeal end of the Eustachian tube that the Eustachian orifice is closed in many cases before the germs gain entrance into the tympanic cavity."

[We have long maintained that a beneficent closure of the pharyngeal mouth of the Eustachian tube takes place in all instances in which the nasopharynx is loaded with pathogenic germs. It is unfortunate when this seal is broken, either by the efforts of the patient or his physician, to inflate the tympana and thereby launch disease germs into a naturally aseptic cavity.]

In group 3 the one case of scarlatina showed otitis media on both sides.

In group 4, in eleven cases of uncomplicated pneumonia, there was only one —a six-months-old child—in which otitis was absent. In the other ten, varying from two to fifteen months, all showed ambilateral purulent otitis media. In groups 6 and 7 are cases of a complication of pulmonic and enteric diseases. In these two groups were 35 per cent. of all cases tabulated by Ponfick. Of chronic enteritis, complicated or not with pneumonia or severe respiratory disease, there were twenty-six cases, only one of which was free from otitis media. In three cases of congenital syphilis, all under four months, the cause of death was thought to be "a low constitutional vitality without any special symptomatology beyond this; but post-mortem examination revealed in all three of these cases purulent otitis media upon both sides." Pomeroy says: "In the face of these facts it seems to me we cannot conscientiously attend any grave disease in children without the most careful examination as to the condition of the ear." He then gives notes of five cases with symptoms of gastro-enteritis and pneumonic complications, in one of which otitis media was found to be the true cause of the severe general symptoms. The first case proved fatal, the ear not having been suspected as the cause of disease; the other four recovered promptly after paracentesis of the membrana tympani. He concludes by saying that the policy of waiting for ear symptoms to arise in infants is entirely unreliable, because in Ponfick's 100 fatal cases spontaneous rupture had occurred in less than 9 per cent. of the series.

Osteoma of the Auditory Canal.—KAYSER (*German Otological Society*, May, 1899; *Archives of Otology*, October–December, 1899) has exhibited a large bony tumor, 17 mm. by 11 mm., removed from the posterior superior wall of the external auditory canal. The patient, a man forty years old, had suffered from transient otorrhœa in youth. The tumor had a pedicellate attachment, and was easily removed by a few blows of the chisel. The tumor was cancerous in structure. After its removal the perforation in the membrana closed, the otorrhœa ceased, and the hearing was much improved.

Tubercular Tumors of the Skull and Both Tympanic Membranes.—H. FREYSING (*Archives of Otology*, October–December, 1899) reports the occurrence of multiple tubercular tumors of the skull and both membranes, pursuing a relatively mild course, in a young man of nineteen years. The growths were removed by means of the knife, and the wounds healed rapidly and well. After six months there was no recurrence, and the patient's general condition was good. There were no signs of tubercular disease elsewhere in the body.

The Ear in Typhoid Fever.—F. SIEBENMANN (German Otological Society, May, 1899, and *Archives of Otology*, October–December, 1899) has found in autopsies of three cases of typhoid fever the fossula of the round window filled with fatty tissue. The genesis of these lipomatous masses at this point is not yet determined.

Otitis Media in Early Childhood.—A. BARTH (*Archives of Otology*, October–December, 1899) draws attention to the fact that in young children the

ear is often affected at the same time that other diseases are present, and that there may be a causal relation between the two conditions. He is impressed with the fact that recent records show that of 600 children examined before and after death 80 per cent. were found to have a lesion of the middle ear. He states that though the middle ear may be inflamed and contain pus, the membrana often shows little or no alteration excepting a bulging at some point; it may or may not be infected. He believes that infection of the ear takes place from the nasopharynx through the Eustachian tube—*e. g.*, by water forced into this space in breathing and in the use of the nasal douche. He also maintains that spontaneous rupture of the membrana is the rule in otitis in adults, while in young children it is the exception. (This is probably due to the fact that in very young children the membrana is much thicker than in older ones.)

"The influence exerted upon the general system in cases of otitis media is greater in children than in the adult. Many children often lose their appetite and have other digestive disturbances which, if the trouble lasts long enough, end in general marasmus and death. Symptoms of some other trouble to which the ear affection may be secondary often mask the symptoms of the middle-ear inflammation entirely; again, the middle-ear trouble may run its course without affecting the general condition of the child." (The latter may be true of recognized ear disease characterized by a discharge—*i. e.*, by an external symptom—but the unrecognized, the unsuspected ear disease, is often the cause, not the effect, of loss of appetite, digestive disease, marasmus, and death.) Barth concludes by saying, "From what has been said of the frequency of middle-ear inflammations in children and of the *absence of symptoms* in many instances, we can conceive of the *rationale* of a daily examination of the ears of all unwell infants from the beginning of their trouble to the end of convalescence. In the absence of otorrhœa there is no symptom by which inflammation of the middle ear can be recognized with any degree of certainty by the inexpert, so that the children are often treated for other infantile diseases when *an inspection* of the drum might have led to a diagnosis."

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

F. B. MALLORY, M.D.,

ASSISTANT PROFESSOR OF PATHOLOGICAL ANATOMY, HARVARD UNIVERSITY.

On the Position of the Malignant Adenoma among Tumors.—HANSEMANN (*Virchow's Archiv*, 1900, vol. clxi., p. 453) objects to the view recently expressed by Selberg, that the malignant adenoma is a special form of tumor, and advances the following line of argument in support of his objections:

Clinically the course of the malignant adenoma is exactly like that of the carcinoma. It can recur after extirpation; it can ulcerate. Left to itself it

has no physiological limit of growth, and it causes an increasing cachexia up to the time of death. The relation of this tumor to the carcinoma can be followed best in the adenomata of the colon, owing to the marked differentiation of the normal epithelium into beaker cells. In some destructive adenomata of the colon, beaker cells may occur in all parts of the growth. If metastases have occurred, beaker cells may or may not be present in them. If the tumor returns after extirpation, beaker cells may be present or absent. Such adenomata containing beaker cells show the least conceivable histological variation from the normal mucous membrane. But there are other malignant adenomata of the colon which from the beginning contain no beaker cells, and in which they never occur in the metastases or in the recurrences.

For a tumor to deserve the definition of the malignant adenoma, authors desire that the gland character shall be preserved, not only in the primary tumor but also in the recurrences and in the metastases. Such cases actually occur, but more often there occurs in the metastases and recurrences a gradual transformation to cylindrical cell carcinoma, or even to medullary or colloid carcinoma. The writer cites such a case. To this transformation or development in the character of the growth he applies the term "anaplasia," and he says that the possibility that the anaplasia in such a tumor may increase exists at all times in every malignant adenoma.

Although these relations between adenomata and carcinomata are less evident in other organs in which the cells are less differentiated, still they can be observed everywhere. There are malignant adenomata of such slight anaplasia that it is shown not in the form of their cells, but only in their course and in their manner of spreading. From these forms there are all possible transitions to the most anaplastic carcinomata; this variation is shown not only by comparison of different tumors with each other, but can be seen in different parts of the same tumor or in its recurrences and metastases.

Because occasionally tumors are found which retain the adenomatous structure in the primary tumor and in the metastases and recurrences, it must not be concluded that they must retain it under all circumstances. That would be the peculiarity of a special form of tumor, just as a carcinoma always remains a carcinoma and never becomes a sarcoma, or a lymphosarcoma never changes to a spindle-cell sarcoma; but a malignant adenoma can change at any time and in any place to a carcinoma, or, as the author expresses it, "increase in anaplasia."

To state the thought briefly, the destructive adenoma differs from the carcinoma not in principle, but in degree.

It is convenient to retain the names malignant adenoma, adenocarcinoma, etc., because they express more than the term carcinoma.

Hansemann's conclusion is that malignant adenomata distinguish themselves in no way from carcinomata, and do not deserve to be elevated to the position of an especial form of tumor. They are not co-ordinate with carcinomata, but subordinate.

Beside this discussion of the relation between malignant adenoma and carcinoma, the writer also treats at some length of the different varieties of the malignant adenoma and of the situations in which it is found.

A Modification of van Ermengem's Method of Staining Flagella.—HINTERBERGER (*Centralblatt für Bakteriologie*, 1900, xxvii., 597).

The object of the author's modification is to avoid the precipitate which is almost always present in the van Ermengem specimens. He thinks it due to an excess of silver nitrate. To get rid of this he bases his procedure on the fact that silver nitrate treated with sodium chloride is precipitated, and this precipitate dissolves in ammonia or the subsulphate of soda. He uses an alcoholic solution of silver nitrate for staining, because only the excess is precipitated by the sodium chloride.

The writer strongly advises against metal forceps, and describes a pair which he has devised made of glass. He also emphasizes the necessity of extreme cleanliness of the cover-slips.

For cleaning the latter he recommends boiling in chromic acid solution, pouring off and changing the solution repeatedly till it no longer changes color; the cover-slips are then washed repeatedly with water, followed by 95 per cent. alcohol, and alcohol and ether, and are then allowed to stand in absolute alcohol till needed. When ready for use handle with sterile forceps and dry over a Bunsen flame. Place a drop of boiled filtered well-water on a clean cover-slip and make an emulsion of the culture, and from this prepare the specimens for staining. Dry in air. Fix in a thermostat at 100° to 110° C. for a few minutes. Drop on van Ermengem's mordant for thirty minutes. Wash alternately in water and 95 per cent. alcohol, removing the latter finally with distilled water. Drop on a 1 per cent. solution of the crystals of silver nitrate in absolute alcohol. Let this flow off, and in a few minutes dip alternately several times into a 7 per cent. sodium chloride solution and a 30 per cent. solution of ammonia.

Remove excess of ammonia with 95 per cent. alcohol, and wash with water. Drop on a solution of gallic acid (distilled water, 20 parts; 3 per cent. gallic acid, 20 parts; 50 per cent. sodium acetate, 2 parts); draw off with filter paper (do not blot). Pass it rapidly through a bath of 0.25 per cent. silver nitrate solution in equal parts of water and 95 per cent. alcohol till solution begins to turn black and the preparation a faint brown. Dry and mount in balsam.

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DR. ALFRED STENGEL, 1811 Spruce Street, Philadelphia, U. S. A.

Or

DR. HECTOR MACKENZIE, 34 Upper Brook St., Grosvenor Square, London, W., Eng.

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ERRATA. DR. C. W. BURR'S article in JOURNAL for March, 1901.

Page 305, line 22, *for* "stereoagnosis," *read* "stereognosis."
" 305, " 24, " "stereoagnostic," " "stereognostic."
" 305, " 27, " "stereoagnosis," " "stereognosis."
" 309, " 5, " "stereoagnosis," " "stereognosis."
" 309, " 9, " "stereoagnosis," " "stereognosis."
" 311, " 20, " "stereoagnosis," " "stereognosis."
" 311, " 21, " "stereoagnosis," " "stereognosis."